Quality of Delivery Care in Rural China.

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy by

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Abstract

In China, all deliveries are required to take place in health care facilities. Routine monitoring and studies have shown that most women do give birth in facilities. Studies have also indicated that the quality of care in rural China is poor, and in need of improvement. However, they have not rigorously assessed quality and there is a lack of in-depth knowledge. This study aims to answer three main research questions:

1. What does quality of care in maternal health mean to women, mothers, obstetricians and midwives, hospital managers, and maternal health policy makers in rural China?
2. What quality of care do women receive during childbirth in hospitals?
3. What factors influence the quality of childbirth care in hospitals?

Using a county level case study approach, six townships and two county-level hospitals were selected in a county in Anhui province. Two theoretical models of quality of care were applied: the health systems and the perspectives models. Data were collected using qualitative and quantitative methods from December 2007 to August 2009. Interviews and focus group discussions (FGDs) were used to investigate the phenomenon of childbirth in hospital, as this is experienced by women, mothers, health workers, managers and policy makers. Policy documents related to childbirth care were analysed. Facility and records assessments provided an overview of the quality of childbirth care in each facility through assessment of structures such as facility layout and resources, process of care such as the delivery notes and partographs, and outcomes of care in the delivery registers. In total 6 FGDs and 59 interviews with women and mothers, 25 interviews with health workers, 8 interviews with managers, 6 key informant interviews, 8 facility assessments, 1414 register assessments, 111 record and partograph assessments were conducted. Qualitative data were analysed using the "Framework Approach". Quantitative data were analysed to describe the frequency of outcomes and practices in facilities. A range of measures to ensure trustworthiness were employed. Ethical approval was obtained from the Liverpool School of Tropical Medicine and informed consent process was followed with all participants.

This thesis generates a detailed picture of what women, families, health workers, managers and policy makers perceive as good quality delivery care. The central feature was the assurance of safety, resulting in a healthy mother and baby. The ideal delivery was seen as a normal vaginal delivery (NVD) in a facility with an older, skilled and experienced doctor who is able to relieve pain, treat with respect and manage complications. For some women, some aspects of their ideal delivery were met. However, little support from providers and relatives was experienced; there was no pain relief during labour and limited involvement in decision making. Childbirth care was highly medicalised, but not necessarily based on the latest available evidence for example the high caesarean section (CS) rate. This thesis discusses the care provided during NVD and how this may contribute to the escalating CS rate. Aspects of the health care system that influence quality of delivery care were explored: lack of evidence based guidelines and protocols in all facilities; supervision followed the more traditional model whereby external supervisors visit the facilities periodically to inspect records, with little attention paid to individual health care provider performance and problem solving; opportunities for discussing quality of care and how to improve it were often missed; loss of skills and confidence in conducting NVD and managing complications; and training fails to equip health care providers with the skills and experience to manage NVDs.

In this study qualitative and quantitative research approaches were used to gather data from a wide variety of sources relevant to the quality of delivery care in rural China. Lessons learned from this case study can be informative about the experiences of childbirth in similar contexts and could be used to generate theory to be tested more widely.

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I hope my efforts are worthy of you.

Abbreviations

BEmOC	Basic Emergency Obstetric Care
CEmOC	Comprehensive Emergency Obstetric Care
CH	County Hospital
CS	Caesarean Section
D&C	Dilatation and Curettage
Dr	Doctor
DfID	Department for International Development
EmOC & NC	Emergency Obstetric care and Newborn care
FGD	Focus Group Discussion
IDI	In Depth Interview
KII	Key Informant Interview
LSTM	Liverpool School of Tropical Medicine
MCH	Maternal and Child Health
MNH	Maternal and Neonatal Health
MOH	Ministry of Health
MVA	Manual Vacuum Aspiration
NC	Newborn Care
NVD	Normal Vaginal Delivery
O&G	Obstetrics and Gynaecology
PI	Paired Interview
PRC	People's Republic of China
QOC	Quality of Care
SBA	Skilled Birth Attendant/Attendance
TBA	Traditional Birth Attendance
TCM	Traditional Chinese Medicine
TH	Township Hospital
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organisation

Code for characteristics of participants

Method	IDI, PI, FGD, KII
Unique reference number	Number
Participant	W-women, M-mother, Dr-doctor, Mid-midwife, MCH-MCH worker, Pharm – pharmacist, Man-manager, PM-policymaker
Location of delivery/work	T-township, C-county, TCM-Traditional Chinese Medicine
Type of Delivery	NVD-normal vaginal delivery, CS-caesarean section
Gender	F-female, M-male
Age	Years

In order to protect the identity of the participants, the county and townships are labeled instead of using their names. The researcher holds the identities of the locations.

Chapter 1: Introduction

1.1 Background to the research

It is estimated that between 350,000 and half a million women die of pregnancy-related causes worldwide and 99% of these occur in the developing world (Hogan et al. 2010). Over 80% of these deaths could be prevented or avoided through actions that are proven to be effective and affordable (Khan et al. 2006). In addition an estimated 2 million intrapartum-related stillbirths and neonatal deaths occur each year, accounting for 42% of deaths in children aged less than 5 years (Lawn et al. 2004).

Ensuring access to and availability of skilled birth attendance (SBA) and emergency obstetric care (EmOC) that is effective and of good quality are key strategies to help reduce maternal and newborn mortality and morbidity (Bullough et al. 2005; WHO 2005a). The Millennium Development Goals (MDG) 4 and 5 have clearly identified targets—to reduce the under 5 mortality rate and the maternal mortality rate, and have matching well defined indicators. For MDG 5 this includes the proportion of births attended by skilled personnel, antenatal care coverage and contraceptive prevalence rate. It is however important that increased coverage with care is matched with improved quality of care in order to really influence health outcomes. In addition, where the quality of care is poor (including non-woman friendly care), women are less likely to access such care even if available (Faye et al. 2011). For example in many countries, traditional birth attendants are still preferred as they are seen to be more friendly and understanding of the needs of women during childbirth (Titaley et al. 2010). Case fatality rates for obstetric complications are often still above the United Nations level of <1% in many hospitals for many reasons including limited knowledge and skills of health care providers' and a resulting poor quality of care (Paxton et al. 2006a).

National confidential enquires into maternal deaths, as well as smaller scale studies assessing quality of health care provision, have identified that poor quality care is a factor that may result in low uptake of care, as well as available care not resulting in effective and timely management of life threatening complications of pregnancy and childbirth (Fauveau and de Bernis 2006; Althabe et al. 2008). Thus lack of appropriately trained staff, incorrect treatment, poor staff attitude, delay in referral, poor cooperation and interpersonal relationships between health providers as well as inadequate supplies and equipment are evident in many resource poor settings (Wagaarachchi and Fernando 2002; Pattinson 2006).

The recognition of what quality of care is and how it can be evaluated is essential in improving services. However, defining the quality of maternal and newborn health care is challenging for

several reasons: most women accessing maternity services are well, but some will develop conditions requiring a higher level of maternity care; maternity care is aimed at 2 or more recipients—the mother and the newborn; and childbirth is a culturally and emotionally sensitive area, so non-biomedical outcomes may be more important than in other areas of health care (Pitroff et al. 2002).

China has experienced economic reforms during the last twenty years. Although this has generated a rapid economic growth, it has also created new challenges. One of these challenges is disparity in health and health care between geographical regions (Gao et al. 2002; World Bank 2003; Dummer and Cook 2007; Eggleston et al. 2008; Wagstaff et al. 2009a). Before these reforms, the Chinese health system was successful in providing basic care at low cost. It was funded by Co-operative Medical Schemes (CMS) (Carrin et al. 1999). However, with the transition to market oriented economy, the CMS declined, leaving the vast majority of the rural population without any form of health insurance coverage, having to pay out of pocket for their health care, and vulnerable to catastrophic health expenses (Tang et al. 2008). In 2003, China launched the New Cooperative Medical Scheme (NCMS) as a form of subsidized health insurance for the rural areas. By 2007, it had expanded to 86% of the rural counties, covering almost 730 million rural people (Ministry of Health China 2007a; Sun et al. 2009a). Government funding of rural health facilities is small and so they must rely on user fees and sale of drugs and investigations to cover operating costs.

In 1999 a joint WHO/UNFPA/UNICEF/World Bank statement called on countries to "ensure that all women and newborns have skilled care during pregnancy, childbirth and the immediate postnatal period" (WHO 1999). Increasing the proportion of deliveries with skilled attendance is regarded as a crucial intervention strategy and widely advocated by international agencies (Safe Motherhood Inter-Agency Group 2000). In China, skilled birth attendance frequently means delivery in health facilities. The Maternal and Infant Health Care Law of the People's Republic of China which came into force in 1995, requires that all deliveries take place in hospitals (Bogg et al. 2010). In a review of maternal and child health services (Ministry of Health China et al. 2006), it was recognised that township hospitals are the major maternal and child health care service providers in the rural areas. However, it was highlighted that these hospitals have limited facilities, low capacity and quality of services is in need of significant improvement.

In resource poor settings, increasing proportions of women are giving birth in a health facility, especially where there are demand side financing schemes for example in India (Kesterton et al. 2010). There is a tendency to treat all births routinely and with the same level of intervention (WHO 1996). Interventions that have no benefit, or are potentially harmful to women or their newborns

continue to be practiced; while interventions that are demonstrably useful and could save lives are not routinely practised (Langar and Villar 2002). It is vital that staff use life-saving and cost-effective interventions, and provide care in a way that encourages women to use the service.

In China, quality of care has been described and analysed in the area of family planning (Kaufman 2005; Kaufman et al. 2006), but there is limited data available, particularly in rural China, on quality of care in maternal health. The focus of studies has been on access and utilisation of services. Studies have implied a poor quality of maternal health care, but they have not rigorously assessed quality. An observational study that looked at the use of evidence based obstetrics in four urban hospitals showed that obstetric care is not following the best available evidence (Xu et al. 2001).

1.2 Research aim and objectives

This study will investigate the quality of delivery care in the rural areas of Anhui Province in China. In particular it will explore provider and user views of quality, assess the quality of delivery care, explore women's perceptions of the care they receive, and analyse the factors that influence the provision of care. These findings will help guide policy and practice in improving the quality of maternal health. It will seek to develop a body of knowledge on quality of care in maternal and newborn health which could be transferable to other rural areas in China, and to other resource poor settings.

1.3 Research questions

The thesis will address three main questions:

1. What does quality of care in maternal health mean to women, mothers and mothers-in-law, obstetricians and midwives, hospital managers, and maternal health policy makers in rural China?
2. What quality of care do women receive during childbirth in hospitals?
3. What factors influence the quality of childbirth care in hospitals?

1.4 Structure of the thesis

The thesis is presented in 9 chapters. Following the introduction (Chapter 1), background information about China and the study county is presented including a brief overview of the history, geography, politics, demography and socio economic development of China; the health care system in China with a particular focus on the rural areas; maternal health and maternal health care provision in China and the study county; and socio-cultural factors influencing maternal health and health care (Chapter 2). In Chapter 3, international literature is reviewed to highlight what is already

known about the subject of quality of delivery care and to identify the gaps in knowledge. The areas reviewed include: global agenda for childbirth approaches to childbirth; women's expectations of childbirth; the concept of quality in health care with specific reference to maternal and newborn health; the approaches that influence quality of care; and the ways to assess and improve quality of maternal and newborn health care. Chapter 4 describes and discusses the methodology and methods used in this study, as well as mechanisms to assure the quality of the data and ethical considerations.

The results are divided into three chapters. In Chapter 5, the provision of care is described: the availability of services through facility assessments; the provision and utilisation of services through review of case notes, registers and partographs; and the provision of care during labour and delivery from the perspective of health care providers, managers and key informants. In Chapter 6, women's and mothers' expectations and experiences of care are explored. Chapter 7 looks at the factors affecting the quality of care including: providers' perceptions, resources, and policies.

Chapter 8 discusses the key findings answering the three research questions and considers the methodological and data quality issues that relate to the trustworthiness of the findings. Finally, Chapter 9 offers some concluding comment and recommendations for further research and action and considers how the answers to the research questions proposed in the thesis constitute an original contribution to knowledge.

1.5 Statement of contribution

This thesis is composed of my original work. I designed the study, developed the data collection tools, was present at most interviews and focus group discussions, conducted the facility assessments and records review with support from the Chinese research team, analysed and interpreted the data, and wrote the thesis.

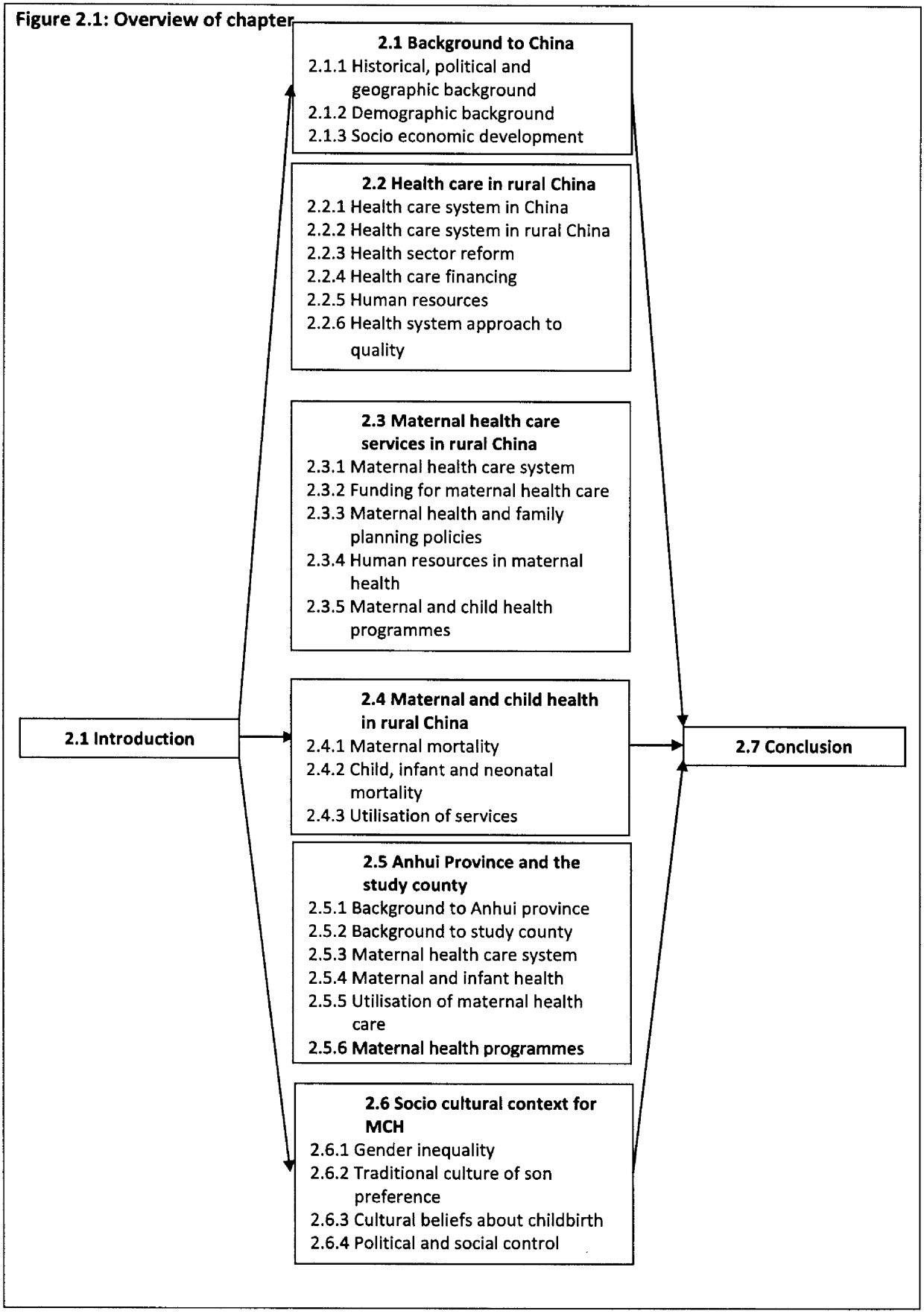
The Chinese research team, conducted the interviews and focus group discussions, following training conducted by myself. The Chinese research team and the supervisory team provided comments on the data analysis and interpretation.

Chapter 2: Background to Study

2.1 Introduction

This chapter presents background information about China and the study county. It consists of six sections. The first section provides an overview of the history, geography, politics, demography and socio economic development of China. The second section describes the health care system in China with a particular focus on the rural areas. The third section focuses on maternal health care provision in China, followed by a section on maternal and child health outcomes. The fifth section describes the study setting with an overview of the study province and county, with a particular focus on the maternal health and health care situation in the county. Finally, there is a section on the social cultural context for MCH. Figure 2.1 provides a more detailed overview of the chapter.

Figure 2.1: Overview of chapter



2.2 Background to China

2.2.1 Historical, political and geographic background

With nearly 4000 years of continuous history, China is one of the world's oldest civilizations. The People's Republic of China (PRC) was founded in 1949 after the Communist Party defeated the nationalist Kuomintang in a civil war. Under the leadership of Mao Tse-Tung, the "Great Leap Forward", a programme of state control over agriculture and rapid industrialisation was implemented. The "Cultural revolution", a 10-year political and ideological campaign (1966-76) aimed at reviving revolutionary spirit, produced massive social, economic and political upheaval. Mao's death in 1976 ushered in a new leadership and economic reform. In the early 1980s the government dismantled collective farming and allowed private enterprise. From 1986, China's "Open-door policy" opened the country to foreign investment and encouraged development of a market economy and private sector.

The Communist Party of China (CPC) is the founding and ruling political party of the PRC. It maintains a unitary government centralising the state, military, and media. The legal power of the Communist Party is guaranteed by the PRC constitution. China at present is divided into 22 provinces, 5 autonomous regions, and 4 municipalities running under direct control of the central government.

Figure 2.2: Map of China showing provinces, municipalities, autonomous regions and bordering countries.

2.2.2 Demographic features

With a population of 1,317,885,000 in 2007, equivalent to 20% of the world's citizens, China is the most populous country in the world (World Bank 2009). It has a population growth rate of 0.5% and a total fertility rate of 1.8 births per woman. The majority of the population are classified as rural, with 58% living in the rural areas. This proportion has reduced over time, with 72% of the population being rural in 1991, as many rural people migrate to urban areas for employment. The majority of the population are Han Chinese (92%), but China is also home to 55 ethnic minority groups (State Council Information Office 2005). The main language is Mandarin, but dialects and minority languages are also spoken.

2.2.3 Socio economic development

In the last three decades, China has undergone a remarkable transformation. The highly planned and centralized country of the 1970s has given way to a dynamic market economy. Since 1979, with the introduction of sweeping agricultural, industrial and economic reforms, China has moved from being a very poor low-income country to a successful middle-income country (Wagstaff et al. 2010). **Gross domestic product** has grown an average of 9% per annum (World Bank 2011). With this rapid economic growth, have also come improvements in living standards for Chinese people. Between 1981 and 2004, the number of people classified as poor fell from 652 million to 135 million (World Bank 2009). Chinese people are now wealthier, better educated and healthier than ever before (UNDP and China Institute for Reform and Development, 2008). Life expectancy at birth has increased from 35 years in 1949 to 73 years in 2007 and adult literacy rate rose from 66% in 1982 to 91% in 2007 (World Bank 2011).

Despite this rapid economic ascendance, there are many challenges. Sixteen per cent of the population live on or below the $1.25 per day poverty line, equivalent to nearly one-third of the population of sub- Saharan Africa. Poverty is concentrated in rural areas, within ethnic minorities and in western provinces (House of Commons 2009). Another key challenge is internal migration with an estimated 300 million people moving to cities over the next two decades. The implications for the country's development are wide-ranging and include poverty for those left behind in rural areas and overcrowded, polluted cities (House of Commons 2009). Rapid growth has also come at a serious environmental cost and has raised concerns about sustainability in the face of urbanization and climate change (UNDP 2010).

2.3 Health care in China

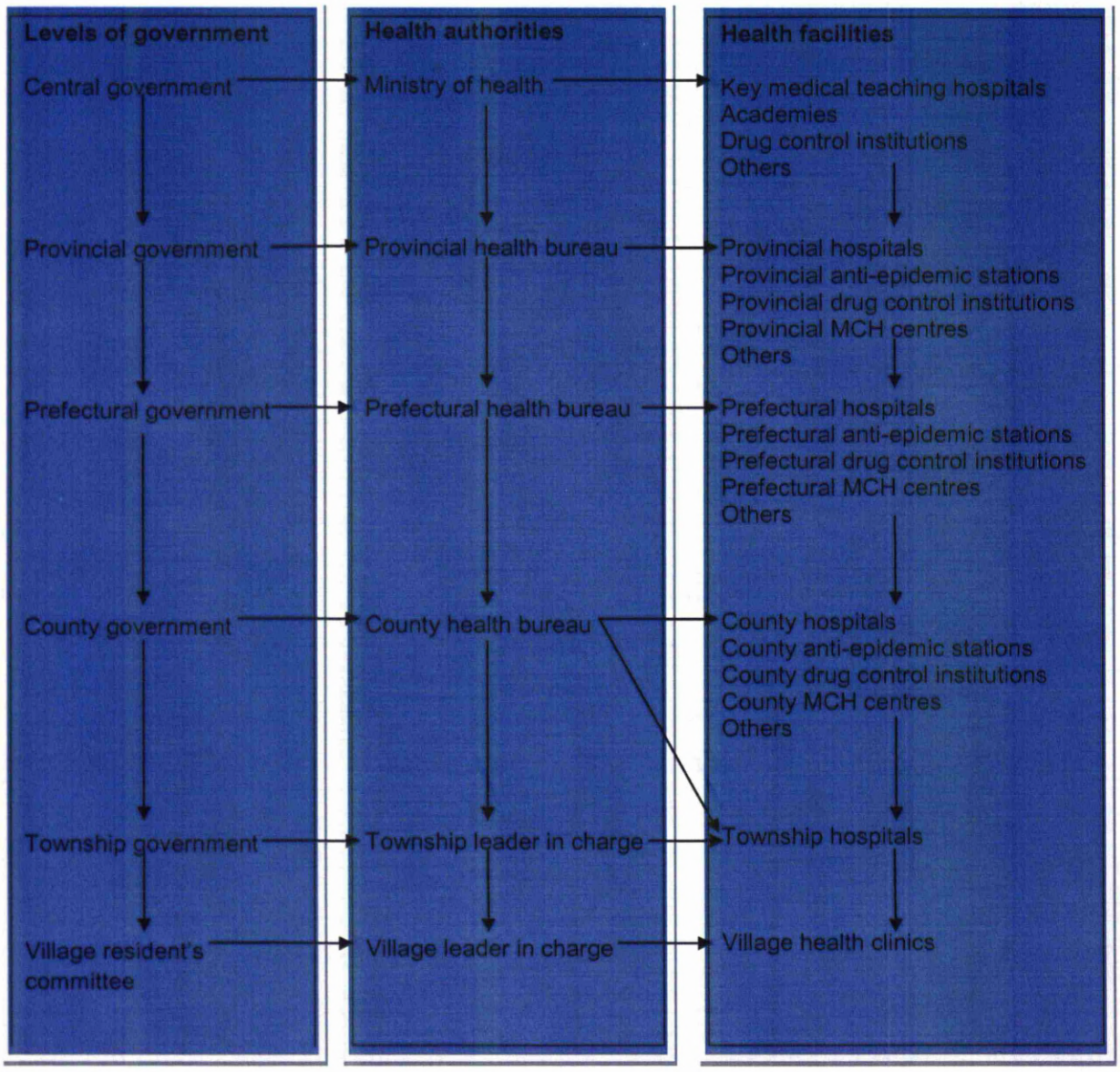
2.3.1 Health care system in China

China has established a comprehensive health service system, including curative care, prevention of ill health, rehabilitation, education and research. There is a dual structure in urban and rural areas, with a three-tier service network in both areas. There are five levels of government: central government, provincial or municipal government, prefectural government, county government and township government. The corresponding health administration authorities include the Ministry of Health (MOH), the provincial health bureau, prefectural health bureau, county health bureau, and the leader of the township government. In the rural area, the service delivery system includes the county hospitals, the township hospital, and the village health clinic. Figure 2.3 illustrates the complex health system structure in China.

2.3.2 Health care system in rural China

The health delivery system in rural China is characterized by three levels of health care institutions (Qian et al. 2009). At the county level, county hospitals and other health institutions, including the Traditional Chinese Medicine Hospitals, provide comprehensive services and take referrals from the lower tier health facilities. They provide technical guidance to the township hospitals and village clinics. At the township level there are township hospitals providing out-patient and in-patient services through full time staff, and supervising village clinics. At the village level, there are village clinics served by one or more part-time staff, often not medically trained, providing basic health care and some maternal and child health care. The majority of the hospitals are state owned and rely on both government and other sources of income to operate, whereas many village clinics were sold to or taken over by individuals and now run as private enterprises (Huong et al.2007).

Figure 2.3: Health system structure in China



2.3.3 Health sector reform

Before the economic reforms in China, the health care system was highly centralised with health services being financed and provided by the public sector with rural primary health funded largely from collective agricultural production. The Cooperative Medical Scheme operated at the village level, and was financed through rural welfare funds and members contributions. The scheme provided 90% of rural populations with access to basic care and covered 50–70% of their total medical expenditure (Gu and Tang 1995). Health care was at relatively low cost for households

(Bloom and Tang 1999). Although there were problems with quality of care, rural health care networks were widespread and provided universal access to basic primary health care.

The introduction of the household system in the late 1970s led to the demise of the collective system which in turn led inevitably to the decline of the Cooperative Medical Scheme (Ma et al. 2008). This left the vast majority of the rural population without any form of health insurance coverage, having to pay out-of-pocket for their health care, and vulnerable to catastrophic health expenses (Tang et al. 2008). Responsibility for health care funding was devolved to local government funded via local taxation. This resulted in reduced public funding of health care and financial independence for public health care facilities. The budget provided to public health facilities was insufficient to cover their fixed costs and public health facilities had to resort to filling the gap by charging patients (Zheng and Hillier 1995). Out-of-pocket health spending became the main form of health finance in rural China. This particularly affected the rural poor, deterring them from accessing health care (Huong et al. 2007). The transition towards a market–based economy had profound effects on health care service delivery, utilisation and ultimately the health of the population (Dummer and Cook 2007; Eggleston et al. 2008; Wagstaff et al. 2009a).

China's current health sector reforms started formally in 2006, when President Hu Jintao demanded universal access to quality basic healthcare and better health outcomes for the Chinese people. The reforms aim to provide "safe, effective, convenient and affordable" healthcare to all urban and rural residents by 2020 through five main pillars: strengthening public health functions and services, enhancing primary care delivery, establishing universal basic health security (insurance), ensuring the safety of and access to essential medicines, and optimizing the management of public hospitals (Brixi et al. 2011). They aim to address problems in health care related to inequity and inadequate access for those in greatest need, quality, inappropriate provision of drugs, increasing antibiotic resistance and unreliable reporting due to perverse incentives (Hu et al. 2008a; Liu et al. 2008; Wang et al. 2008a).

2.3.4 Health care financing in rural China

Total health care expenditure in China has soared over the last 25 years, growing at 16% per year - 7% faster than the growth of gross domestic product (GDP). In addition patients' out-of-pocket health expenditure grew at an average annual rate of 15.7% (Zhao et al. 2003; Blumenthal and Hsiao 2005; Smith et al. 2005). Table 2.1 shows that expenditure on health in 2006 forms a percentage of GDP which is split between 42% government and 58% private expenditure. Out of pocket expenditure is much greater than expenditure using private prepaid plans while 54% of government expenditure is through forms of social security expenditure.

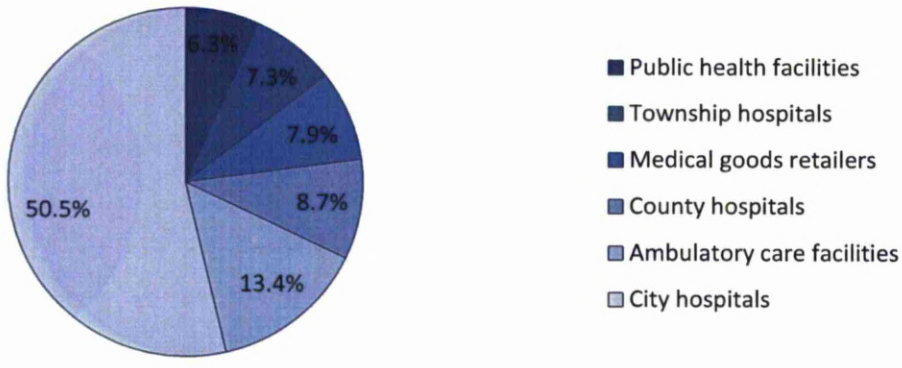
Table 2.1: Health financing and expenditure in China (2006)

Indicator	Figure (%)
General government expenditure on health as a percentage of total government expenditure	**9.9**
General government expenditure on health as a percentage of total expenditure on health	**42.0**
Private expenditure on health as percentage of total expenditure on health	**58.0**
Out of pocket expenditure as percentage of private expenditure on health	**92.9**
Private prepaid plans as percentage of private expenditure on health	**6.3**
Social security expenditure on health as percentage of general government expenditure on health	**54.1**

Source: WHOSIS China data 2006. http://www.who.int/whosis/data/Search.jsp (Accessed on 13 June 2011).

During the economic transition, health facilities, although publicly owned, were encouraged to cover their costs through user charges. By 2000, the government budget for rural facilities covered less than 15% of total cost on average (WHO China 2009). In Figure 2.4, only 7.3% of health spending went to township hospitals, 8.7% to county hospitals, whereas 50.5% went to city hospitals. Almost no government funding is budgeted for village health stations despite their importance as first-line providers of outpatient services for the rural population (Hu et al. 2008a).

Figure 2.4 Distribution of health spending (source China National Health Accounts; China Ministry of Health)



New Cooperative Medical Scheme

Following the demise of the rural CMS, during the 1980s, large sections of the rural population were left without health insurance coverage. In 2003, China launched the New Cooperative Medical Scheme (NCMS) as a form of subsidized health insurance for the rural areas. It was launched in 300 counties, introducing for the first time central government support for rural health care. It aimed to reduce the risk of "catastrophic" health care costs for individuals. By 2007, it had expanded to 86%

of the rural counties, covering almost 730 million rural people (Ministry of Health China 2007a; Sun et al. 2009a).

The voluntary scheme is designed with cost sharing between the central government, local governments and participants, each contributing a modest 10 RMB per capital, totalling 30 RMB per capita per year which corresponded to approximately 10% of the average annual health expenditure for rural residents in China that year (WHO China and the Social Development Department 2006). The subsidies were increased to 30 RMB per capita per year from each governmental level in a subsequent reform package. The design and implementation of NCMS are decentralised and vary with respect to funding, coverage, enrolment, regulations and benefit package across the counties (Wagstaff et al. 2009b). The NCMS includes a maternal care benefit package that also differs in design and implementation across counties. Usually this package provides reimbursement for delivery at a health-care facility, either as a fixed proportion of expenditure or as a fixed payment. Reimbursement may be the same or different for vaginal and Caesarean delivery. In 2008, 92% of the rural population were enrolled in the NCMS (Ministry of Health China 2009).

2.3.5 Human resources

In 2005, there were 5 427 000 people working in the health sector, of whom 4 460 000 were clinical workers (licensed doctors, nurses, and other health professionals) and 967 000 were working in management, logistical, and other areas (Table 2.2). Unlike most other countries, China has more doctors than nurses with a national ratio of doctors to nurses of 1·4, a ratio of 1·3 in urban areas and 1·9 in rural areas (Anand et al. 2008). Up to 70% of doctors and nurses work in urban areas. Increases in actual numbers and density of doctors and nurses have been steady over the last 50 years, with the exception of the decade of the Cultural Revolution (Anand et al. 2008).

There are also problems with the distribution of staff throughout the country (Wu and Rao 2001; Anand et al. 2008). As in many other countries, poor and rural areas have not been able to attract and retain qualified staff (Zhang 2007). This unequal distribution is within provinces as well with many health professionals tending to serve in the provincial urban centres rather than in the rural areas, suggesting that inequality needs to be addressed at the provincial as well as the national level (Anand et al. 2008). Nurses are even more mal-distributed than doctors (Anand et al. 2008). After economic reforms were initiated, many experienced health professionals moved to hospitals in cities and areas with well paying clinics (Wu and Rao 2001). This poses an enormous barrier to the delivery of quality basic health services in remote and rural regions.

Table 2.2: Health workers in China (2005)

	Total		Urban		Rural	
	Number (thousands)	**Density***	**Number (thousands)**	**Density***	**Number (thousands)**	**Density***
All health workers	5427	4.2	3705	6.2	1722	2.6
Licensed doctors	1938	1.5	1291	2.1	647	1.0
Nurses	1350	1.1	1004	1.7	346	0.5
Other health professionals§	1172	0.9	Not recorded	Not recorded	Not recorded	Not recorded
Other health workers¶	967	0.8	Not recorded	Not recorded	Not recorded	Not recorded

Source: Anand et al. 2008

*Per 1000 population, computed by MOH using household registration population data.
§Health professionals (including pharmacists, lab technicians, etc) minus doctors and nurses.
¶All health workers minus health professionals.

Most China's doctors (67·2%) and nurses (97·5%) have been educated up to only junior college or secondary technical school level (Anand et al. 2008). The proportion of urban doctors with college education or greater was 43%, which is more than three times as high as that for rural doctors. Less than 1% of rural nurses have college education or more. There is a diversity of educational programmes offered for doctors and other personnel which raises questions of standardisation and quality.

2.3.6 Health system approach to quality

There are a number of institutions and systems in place which potentially have quality assurance responsibilities, which are described below. However, there are no government bodies solely responsible for quality assurance in health or maternal health.

Regulatory institutions

A number of institutions have been set up by the government and granted power by specific laws to manage health care (and other markets) and to oversee the behaviour of these organizations. They include, but are not limited to, formal regulatory institutions such as the Health Bureaus, the Food and Drug Administration and the Price System (Fang 2008). In addition, there are institutions that play some oversight role over health care facilities such as the Rectifying Incorrect Professional Ethos Office at each level of government (see table 2.3). However their effectiveness in overseeing the behaviour of health facilities has been questioned: weak independence of regulatory institutions; lack of an independent medical professional body; and the insufficient involvement of other actors in the regulation process (Fang 2008).

Table 2.3: Examples of regulatory institutions

Institution	Role
Price system	Oversees the price of public service facilities and the fee charging by any government units that are authorized to charge fees.
Health Administration System	Ministry of Health at the national level and the Health Bureaux at each level of local government are the main government institutions responsible for the regulation of health care. County health bureau has the role of leader, supporter and regulator of public health care facilities.
Food and Drug Administration	Undertakes monitoring and supervision of research, production, selling and usage of food, drugs, cosmetics and medicine related goods and equipment.
Rectifying Incorrect Professional Ethos Office	Guides, organizes, checks and coordinate the prevention and redress incorrect working ethos within public service departments. Led a campaign in 2004 to combat the widespread practice of receiving 'red packets' and drug kickbacks by health workers.

National Maternal and Child Health Reporting System

The National Maternal and Child Health Routine Reporting System, established in the 1980s by the Ministry of Health, covers the entire population of China (Ministry of Health China 2007b). In urban areas, all pregnancies are registered and community doctors keep a log of all pregnancy outcomes (Gao et al. 2009a). Monthly visits to obstetric and emergency departments in their catchment area and police departments are undertaken to further identify maternal deaths. Community doctors send monthly reports to sub-district health managers, who forward summary reports to district health managers twice a year. In rural areas, village doctors use their extensive community networks to identify births and deaths within their catchment area. Data are forwarded monthly to township hospitals and twice a year to the county health bureau (Ibid). However there are reported problems with this data: under-reporting of maternal deaths compared with other surveillance system; and not reporting the causes of maternal death, thereby limiting its usefulness in examining the impact of specific interventions (Feng et al. 2010).

National Maternal and Child Mortality Surveillance System (MCMS)

The MCMS was established in 1989 and covers districts in 37 cities and 79 rural counties, representing all provinces, autonomous regions and municipalities in China (Feng et al. 2010). In each selected city or county, MCH stations are responsible for reporting all live births and maternal deaths, and their cause. A health worker in each village or urban neighbourhood committee records these events in their catchment area. Monthly reports are transmitted to the township or community MCH worker, and quarterly to local MCH stations in each county or district. Local MCH

stations search records in hospitals, funeral homes, police stations and family planning offices to ensure that no maternal deaths are missed. Once a maternal death is reported, a medical doctor visits the family to investigate the circumstances and assign the cause of death. All data are centralised at a national office through a direct online reporting system, and quality assurance is ensured by experts who randomly visit surveillance sites once a year to verify the original reports.

Despite this sophisticated system, several problems have been identified including: difficulty in investigating a maternal death owing to limited family and health worker support for the process; absence of guidelines for completing the maternal death case summary; auditors lacked the necessary knowledge and experience to complete the forms with enough detail to make any conclusions; no details were described that could be used to assess the quality of care, or learn lessons for future improvement; and under-reporting of maternal deaths (Gao et al. 2009b).

2.4 Maternal health care services in rural China

2.4.1 Maternal health care system

The maternal health care system follows the same three-tier service network as the health care system (Ministry of Health China et al. 2006; WHO China 2009; Bogg et al. 2010). Figure 2.5 illustrates the relationships between the different levels of facilities. Firstly, at the central level there is the department of MCH in the Ministry of Health and the National MCH Centre as part of the National Centre for Disease Control. Their role is to provide scientific evidence for the development of laws, regulations and policies regarding MCH, set technical standards, guide the development of services, provide guidance to provincial MCH services and carry out research.

At the province, city and county levels there are MCH hospitals. Province and city MCH hospitals are responsible for monitoring the health status of women and children, providing clinical services for women and children, coordinating MCH within the province or city, training junior health professionals, providing health education, managing MCH information, and conducting research and projects. County MCH hospitals supervise MCH services within their county and conduct training for health professionals, research activities, manage county MCH information and provide clinical services. County general hospitals and Traditional Chinese Medicine hospitals have an obstetrics department where they provide antenatal, delivery and postnatal services.

In each township hospital, the MCH department monitors MCH within the township, compiles statistics and reports to the county level. All township hospitals provide antenatal and postnatal services, and some provide delivery services. Village maternal health workers and doctors, managed by the village commission and supervised by the township hospital, are responsible for antenatal

examinations of pregnant women, referrals, deliveries and postnatal visits. Table 2.4 summarizes where maternal health care services can be sought.

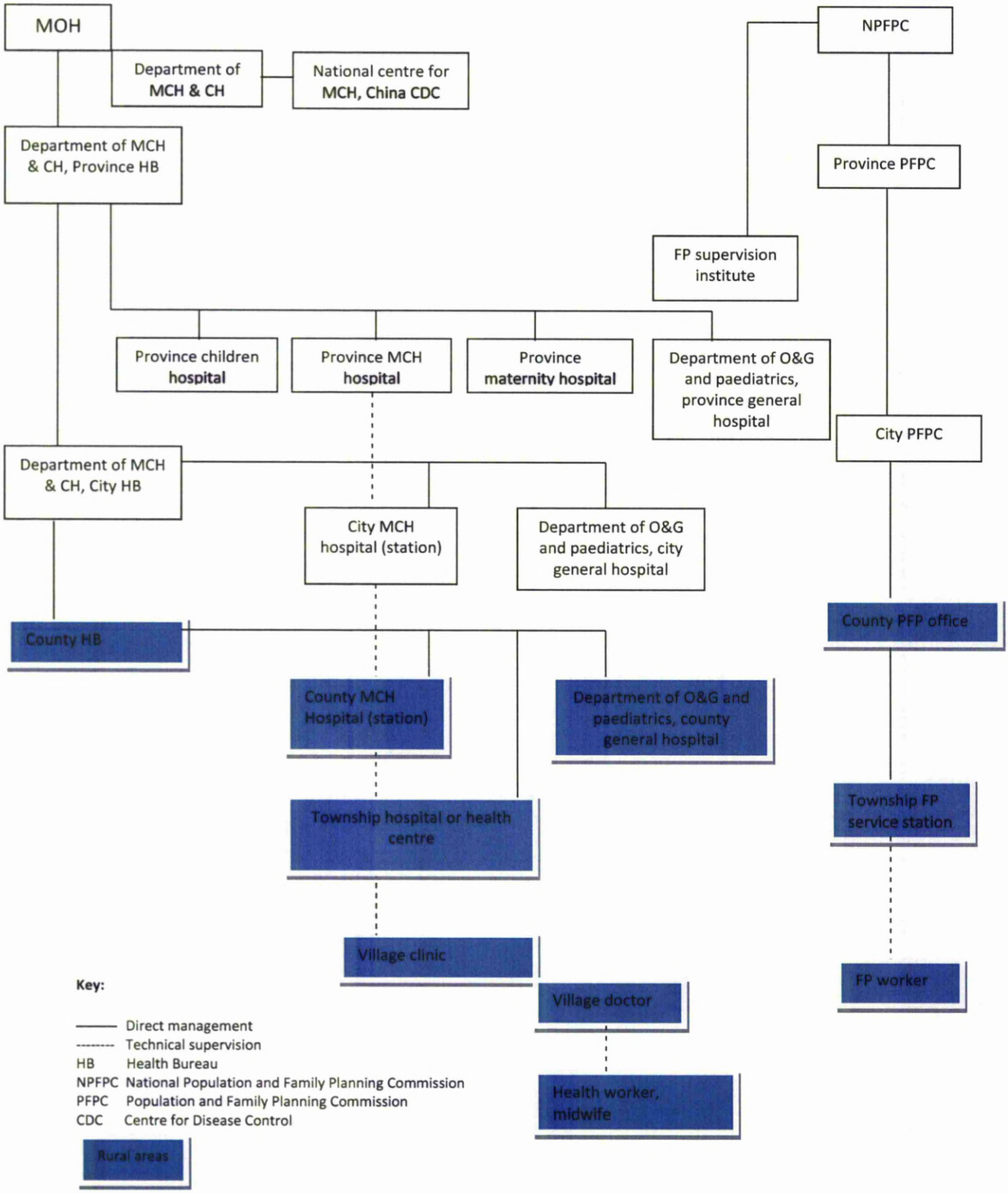
Family planning system

In parallel, there are three levels of family planning services in the rural areas: at county institutes, township service stations and village service posts (Figure 2.5). These institutes are responsible for the implementation of the national family planning policy by giving all married women regular mandatory pregnancy tests, providing contraception and family planning advice. The family planning staff provide some antenatal care. Some family planning institutes at the county and township levels provide delivery services (Wu et al. 2008).

Table 2.4: Location of maternal health care services in rural China

Antenatal care	**Delivery care**	**Caesarean section**	**Postnatal care: facility based (F) and domiciliary (D)**
• MCH hospital • County hospital • Township hospital • Village clinic • FP county station • FP township station	• MCH hospital • County hospital • Township hospital • Village clinic • FP county station • FP township station	• MCH hospital • County hospital • Selected township hospital • Village clinic	• MCH hospital (F) • County hospital (F) • Township hospital (F &D) • Village clinic (F&D)

Figure 2.5: Structure of maternal and child health and family planning service institutions in China
Modified from Health Management, Science Press, 2005, 1st edition.



2.4.2 Funding maternal health care services

Funding for maternal health is part of the allocation for public health and it is up to the individual facilities to allocate the funds to maternal health. As such, maternal health competes with other public health areas for resources. A review of maternal and child health in China highlighted that government funding of maternal and child health is insufficient to ensure access to a quality essential package of interventions. They also found that most financial resources are used in hospital based curative care at county level and not at the township level nor for public health interventions (Ministry of Health China et al. 2006). With limited funding, it is difficult to upgrade or maintain facilities (Raven et al. 2008). Poor facilities may also influence users' perceptions of the quality of care and their use of the services.

Given the limited financial resources of local governments, health care facilities must rely on themselves to offset personnel and operational costs. Some facilities therefore focus on more profitable services, with little emphasis placed on preventive health care (Blumenthal and Hsiao 2005). The quality of maternal health services may be jeopardised by the over prescription of interventions such as CS, blood tests and ultrasound scans, and medications (Ministry of Health China et al. 2006; Raven et al. 2008). Supplier-induced demand drives the health system in China towards fewer preventative and more curative services and increasingly more sophisticated care. The bonus systems commonly used in Chinese hospitals also encourage overuse of expensive drugs and investigations (Dong et al. 1999a).

Limited ability to pay and high hospital costs have been identified as the major barriers for the rural poor wishing to access health care in China (Gao et al. 2002). Data from the Chinese MOH show that fee-for-service income accounted for 82% of the total revenue of maternal health-care institutions in rural China in 2002 (Guo et al. 2008). Delivery is the most costly part of maternal care, and expenditure can be especially high for emergency obstetric care (Filippi et al. 2006). Unexpectedly high expenditure on a delivery can push a family into poverty.

2.4.3 Maternal health and family planning policies

Maternal health policies

The National Working Committee on Children and Women was established under the State Council in 1990, and was responsible for coordinating and promoting the framing and implementation of laws and regulations concerning women and children by different departments within the government. The Maternal and Infant Health Care Law of the People's Republic of China was passed in 1994 and came into force in 1995. The aim of the act is to "ensure maternal and child health and

improve the quality of the population". The Law details the services to be provided including pre-marital health, antenatal and perinatal health and includes guidelines on technical implementation, management and legal liability. Implementation Regulations were introduced in 2001 to support all levels of government to develop a strategy to enhance the development of the maternal and infant health care system. It requires that all deliveries take place in hospitals (Bogg et al. 2010). An evaluation of the impact of the law found that it had been successful in mobilizing resources to some extent, but lack of regulatory power of the law, in combination with the low levels of government finance limit its influence on provider behaviour in the context of decentralization (Tolhurst et al. 2004).

This legislative framework was supported by national MOH regulations, including 'Regulations about Systematic Healthcare Management for Pregnant Women in Rural China'; and state programs such as the 'Program for Chinese Women's Development' and the national plan of action for the development of children, 'Outline of the Program for Chinese Children's Development' in the 1990s (Guo et al. 2008). A Department of Maternal and Child Health Care and Community Health was established within the Ministry of Health in 1998, aiming to strengthen the management of reproductive health services (ibid).

The Licensed Physicians Law issued in 1999 aimed to improve the professional level of physicians, their professional ethics and safeguard their legal rights and interests. It provided regulations on examination, registration, practice, rules, assessment and training for licensed physicians and assistant physicians.

Family planning policy

The one-child one-family policy was officially introduced in 1979 as a set of regulations governing the approved size of Chinese families. The policy was developed in response to the threat that the country's massive population growth posed to economic development and living standards (Kane and Choi 1999; Festini and Martino 2004).

The regulations include restrictions on family size, late marriage and childbearing, and the spacing of children. Despite its name, the one-child rule applies to a minority of the population; for urban residents and government employees, the policy is strictly enforced, with few exceptions. In rural areas, a second child is generally allowed after five years if the first is a girl. A third or more children are allowed for some ethnic minorities (Hesketh and Zhu 1997a; Hemminki et al. 2005; Ding and Hesketh 2006; Wu et al. 2006). The policy is underpinned by a system of rewards and penalties, which are largely administered at the discretion of local officials and therefore vary widely across

villages and regions. They include economic incentives for compliance; and substantial fines, confiscation of belongings, and dismissal from work for non-compliance (Hesketh et al. 2005).

China's one child policy is one of the most controversial social policies ever implemented. Although the policy has led to a reduced fertility rate and helped to raise the living standards of most people, it has been heavily criticized for violating human rights with many negative social consequences (Greenhalgh and Bongaarts 1987; Hesketh et al. 2005). The main criticism of the policy though is undoubtedly its exacerbation of existing sex discrimination, including sex selective abortion and infanticide (Ren 1995; Chen et al. 2007; Liu and Zhang 2009; Zhu et al. 2009). The coercion of women to undergo sterilization, abortion, or insertion of IUDs has also been reported (Johnson 1996; Graham et al. 1998; Bernman 1999; Kane and Choi 1999; Hemminki et al. 2005; Wu et al. 2006).

2.4.4 Human resources in maternal health

The staff skill mix and division of labour for providing maternal health-care services in rural areas is complex, with large variations between areas (Tao et al. 2011). In the county-level hospitals, obstetricians provide antenatal care, NVD and CS, whilst midwives give antenatal care and assist with deliveries. Neither provides postnatal visits to women at home. It is the responsibility of the township hospitals to provide this service. In the township hospitals, the division of responsibilities between different cadres of staff is not so clear. Some hospitals do not have obstetricians, whereas some do not have midwives.

There is a shortage of health personnel working in maternal health to ensure provision of all the services that are required. Health facilities in the townships, and particularly the poor areas, find it difficult to recruit and retain skilled staff because of their inability to provide a good or competitive salary (Gong et al. 1997). Richer counties generate more revenue from local taxation from which they can fund more attractive remuneration packages to get the best staff (Liu et al. 2006). Low level of skills and qualifications of staff are perceived to limit the quality of services provided (Tolhurst et al. 2004).

Little investment is given to maintaining the skills and knowledge of staff through training and support. Managers are often reluctant to send their staff for training because of the costs involved in sending staff for training, and fear of losing trained staff to better paid jobs (Liu et al. 2006; Raven et al. 2008). Hospital managers prioritised training for doctors and in areas where it was anticipated that more revenue for the hospital could be generated, thus neglecting staff working in maternal health. Little research has been done in the area of human resources in maternal health, but this is explored in this thesis.

2.4.5 Maternal and child health programmes

A number of internationally supported programmes have provided financial investment and technical support for the development of rural health services and in particular those targeted at maternal and child health. Activities conducted by the programmes included: large scale training of maternal and child health staff; construction or refurbishment of facilities; purchase of medical equipment (Guo et al. 2008; Wu et al. 2011). Table 2.5 briefly describes the major projects and programmes implemented in the rural areas of China.

Table 2.5: Major projects and programmes conducted in rural China (Wu et al. 2011)

	Name of project (funders)	Time period	Areas covered	Population covered	Investment (USD)	Main target population
1	Reinforcing Chinese MCH and FP services (UNICEF/ UNFPA)	1990-2000	405 poor counties in 27 provinces	160 million	94 million	Reproductive age women and children
2	Comprehensive MCH care – Health VI (World Bank)	1995-2001	282 poor counties in 9 provinces	100 million	139 million	Reproductive age women and children
3	MCH and AIDS control project – Health IX (World Bank)	1999-2008	113 poor counties in 5 provinces	35 million	70 million	Reproductive age women and children
4	Reproductive and Family Planning programme (Chinese Government and UNFPA)	1998-2000	32 counties in 22 provinces	17 million	28 million	Reproductive age women
5	The China Basic Health Services Project – Health VIII (World Bank)	1998-2006	97 counties in 10 provinces	45 million	196 million	All but focus on women and children
6	National Programme to Reduce maternal mortality and eliminate neonatal tetanus (Chinese Government)	2000-2001 2002-2006	378 counties in 12 provinces 1000 counties in 22 provinces	Not estimated	50 million 5-110 million each year	Pregnant women and newborns
7	Rural Health Project (World Bank and DfID)	2008-2013	40 counties in 8 provinces	Not estimated	110 million	All (health financing, service delivery quality, efficiency and cost control

2.5 Maternal and child health in rural China

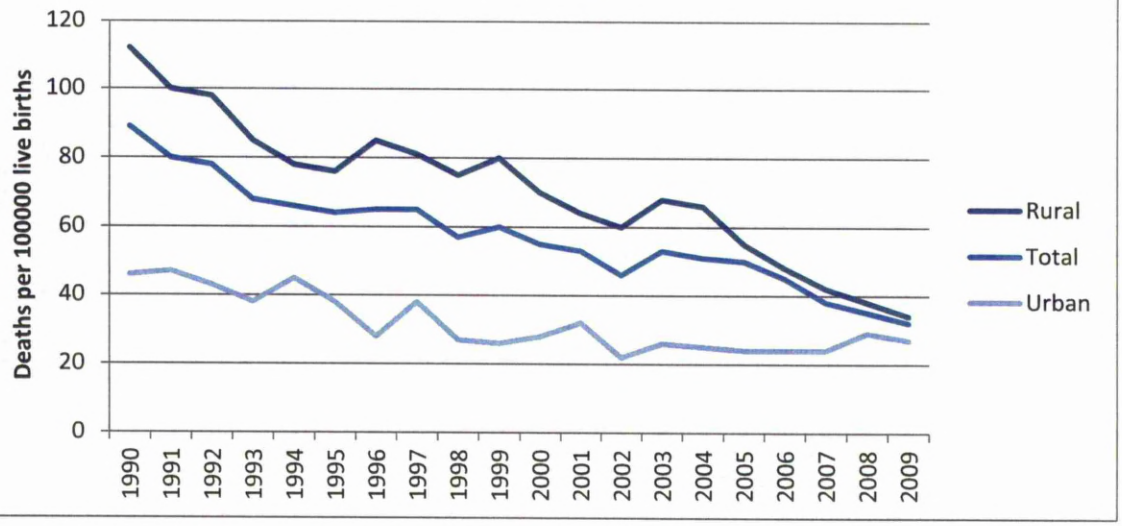
2.5.1 Maternal mortality

China has made great strides in reducing maternal mortality. The national maternal mortality ratio has shown a steady decline from 165 per 100,000 live births in 1980 to 32 in 2009 shown in Figure 3.6 (Ministry of Health China 2009). Other studies have shown similar reductions indicating that China is making substantial progress towards achieving the target of 75% reduction in MMR by 2015 (Gao et al. 2009a; Feng et al. 2010; Hogan et al. 2010). China's success has been largely attributed to

the strategy of increasing hospital delivery: institutional deliveries have risen dramatically, even in the most remote rural areas (Yanqiu et al. 2009; Feng et al. 2010). The leading cause of maternal death is postpartum haemorrhage followed by hypertensive diseases (Ministry of Health China et al. 2006; Feng et al. 2010).

However, urban-rural and regional differences remain. The poorest rural counties experience almost five times higher maternal mortality than urban areas (Feng et al. 2010). Maternal mortality rates in the western region were on average four-fold higher than in the eastern region. Although this uneven progress and inequities in health are concerning, there is evidence that the gap between rich and poor regions is not widening (Gao et al. 2009a; Feng et al. 2010).

Figure 2.6: China's overall, rural and urban maternal mortality ratios 1990-2009



Source: Ministry of Health, Chinese Statistical Health Yearbook, 2009 (1991-2008 data); Ministry of Health Chinese Statistical Health Digest 2010 (1990, 2009 data).

2.5.2 Child, infant and neonatal mortality

Since 1990, China has made steady progress in reducing mortality rates of children under the age of five (see Table 2.6). Infant mortality rates have fallen from 50 per 1,000 live births in 1991 to 15 in 2008 (Centre for Statistics 2011). Despite decreases in child mortality, neonatal mortality has not declined at the same rate (Ministry of Health China et al. 2006). Neonatal deaths account for 60% of all under 5 deaths in 2004 (Ministry of Foreign Affairs China and United Nations System 2010). In 1991, the neonatal mortality rate was 33 per 1000 live births and reduced to 12 in 2008 (Centre for Statistics 2011).

Table 2.6: Neonatal, infant and under 5 mortality rates in China 1991 to 2008

Year	Neonatal mortality rate (per 1000 live births)			Infant mortality rate (per 1000 live births)			Under 5 mortality rate (per 1000 live births)		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
1991	33	12	38	50	17	58	61	21	71
1995	27	11	31	36	14	42	44	16	51
2000	22	10	26	32	12	37	40	14	46
2005	13	7	15	19	9	22	23	11	26
2008	10	5	12	15	6	18	18	8	23

Source: Statistics from MOH 1996, 2000, 2008 (Centre for Statistics, MOH China 2011)

There are still huge disparities in child, infant and neonatal mortality rates across different regions and populations in China. The rates vary according to socio-economic status, urban-rural residency and geographic location (Ministry of Health China et al. 2006).

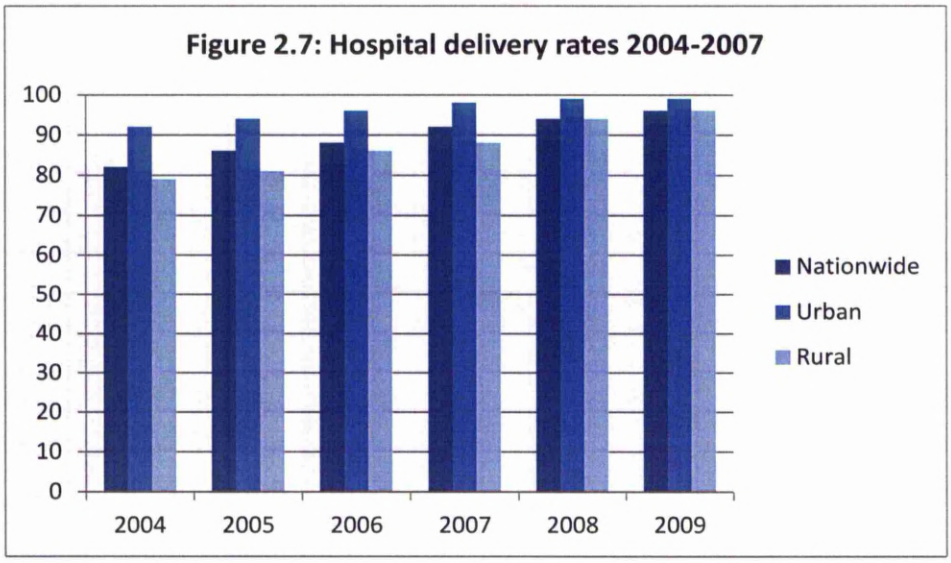
The four leading causes of neonatal death were neonatal asphyxia and trauma, pre-term delivery, low birth weight and hypothermia (Ministry of Health China et al. 2006). Most neonatal deaths occurred within 7 days of delivery, indicating that interventions targeting neonatal and child mortality should be closely linked with strategies to reduce maternal mortality.

The stillbirth rate has shown a reduction from 13.3 per 1000 births in 1996 to 10.4 per 1000 births in 2009 (Cousens et al. 2011). During the past decade, China has dropped from the second to the fourth highest burden of stillbirths globally (Lawn et al. 2011).

2.5.3 Utilisation of maternal health services

Place of delivery

Hospital delivery rate has risen steadily since 2004 throughout China (see Figure 2.7). In the rural areas, the proportion of women delivering in facilities rose from 78% in 2004 to 92% in 2008. The national rural health household survey data show that the proportion of women who gave birth in a township hospital remained similar from 1998 to 2007 (27-30%), but the proportion who delivered at a county or higher-level hospital increased dramatically from 28% to 60% in the same time period (Long et al. 2011).



Source: Statistics from MOH (Ministry of Foreign Affairs China and United Nations System 2010).

Type of delivery

A facility based analysis of types of delivery in 2007 revealed that 46% were CS, 53% were NVD and only 1% were vaginal operational deliveries (Lumbiganon et al. 2010). The CS rate has increased over time in both urban and rural areas. Data from three national household surveys identified a steep increase amongst urban primiparous women rising from 18.2% in 1990–1992 to 39.5% in 1998–2002 (Tang et al. 2006). In rural areas, similar increases have been noted: 6% of women had CS delivery in 1998 and this rose to 26% in 2007. Although the rate has increased in all income groups, women with a high income were always more likely to have a Caesarean delivery than those with a low income (Long et al. 2011).

Utilisation of antenatal and postnatal care service

Table 2.7 illustrates the utilisation of antenatal and postnatal care in China. The proportion of women nationally receiving an antenatal examination in the first trimester of pregnancy has increased from 21% in 1991 to 53% in 2001. Although the rural rates are lower than urban rates, they have also increased dramatically from 13% in 1991 to 63% in 2008. The proportion of women receiving the MOH standard of at least 5 antenatal visits increased from 12% to 44% in the rural areas in the same period. In the rural areas, the proportional increases were much faster in the less developed areas than developed areas (Wu et al. 2011). The situation of postnatal care utilisation is less promising. The proportion of women receiving at least one visit dropped slightly in both urban and rural areas between 1991 and 2001.

Table 2.7 Antenatal and Postnatal Care Utilisation 1991 to 2008

Year	Proportion of first antenatal visit within 12 weeks gestation			Proportion of frequency of antenatal care visit meeting MOH standards			Proportion of postnatal visits (no less than 1 time)		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
1991-1993	21	56	13	NA	47	12	54	64	55
1996-1997	50	74	45	NA	57	28	52	62	50
2001-2003	53	68	49	NA	58	36	54	62	52
2007-2008			63*			44*			

Source: Wu et al. 2011 using data from national health household surveys conducted in 1993, 1998 and 2003; * Data taken from Long et al. 2010 using national health household survey 2008

2.6 Background to Anhui province and the study county

2.6.1 Background to Anhui province

Anhui province is situated in the central part of Eastern China (Figure 2.2). It covers 139,600 square kilometres and has a population of 66.75 million. Within the province, there are 56 counties and 17 cities. With a GDP per capita of 8670 RMB, Anhui is ranked 28th out of 31 provinces in China (National Bureau of Statistics of China 2006).

Anhui's main agriculture is the growth of wheat, sweet potatoes and rice. Natural resources include iron, coal and copper. Industries related to these natural resources are found throughout Anhui. Compared to its more successful neighbours to the east, Zhejiang and Jiangsu, Anhui has lagged behind in economic development, with a GDP per capita around one third of those two provinces. There is great regional disparity as well, and most of the wealth is concentrated in industrial regions close to the Yangtze river, such as Hefei (the province capital), Wuhu and Maanshan. The province has good air, rail and road networks improving access to the east coast (Anhui Government 2006).

2.6.2 Background to the study county

The study county, an area of 880 square kilometres, lies in the south of Anhui province, near to the Yangtze River (Figure 2.8). It is 30 kilometres from Wuhu city and 240 kilometres from Hefei, the capital of Anhui province. The study county has a population of 462,244, and is made up of 20 townships and 121 villages. Agriculture is the main employment in the county. However, the study county is rich in mineral resources and also has good transport links via Yangtze river, roads and rail. It has developed several industries including manufacturing cement. The GDP per capita is 8597 RMB, and the average income per capita is 5338 RMB compared to 15334 RMB in Anhui province and 18364

RMB in the whole of China (Study County Statistics Bureau 2005; National Bureau of Statistics China 2006).

Figure 2.8: Map showing Anhui Province and Study County

2.6.3 Maternal health care system in the study county

Health care provision in the study county follows the three tier system as described in section 2.4.1. At the county level, there are six facilities (Table 2.8). The county hospital is the largest provider of maternal health care services in the county and is the referral centre for the county with a designated centre for obstetric emergencies. The Traditional Chinese Medicine Hospital is also one of the main county level facilities which provides antenatal and delivery services. Obstetricians provide antenatal care, NVD and CS whilst midwives give antenatal care and assist with deliveries. Neither provides postnatal visits to women at home. The county MCH station stopped providing intrapartum services in 2006, but continues with antenatal care and child health services, as well as their monitoring, supervision and training roles. At the township level there are twenty hospitals, staffed by a mix of obstetricians, midwives and / or maternal and child health workers. Township hospital staff provide antenatal, postnatal and childbirth services, and in some hospitals, this will

include CS. Almost all villages have a village clinic, served by several part-time staff who provide basic healthcare services, including antenatal care.

Funding of the health services comes from government budget and user fees. Women pay for maternal health-care services at the point of use (Table 2.8). The NCMS was introduced into the study county in 2004, and covered 93% of households in 2007. The benefit package covers hospital delivery, with a fixed amount of reimbursement of 150 RMB for NVD and 600 RMB for CS from 2006, and therefore only reimburses a small amount of the total fees for delivery as shown in table 2.8. It does not include antenatal or postnatal care.

Table 2.8: Facilities, staffing and fees in the study county in 2007

Indicators			**Number**
Population			462,244
Funding	Total public health allocation		4980000 RMB
	Public health allocation for MCH		950000 RMB
	% of public health allocation for MCH		**19%**
Facilities	County level hospitals		6
	Township level hospitals		20
	Village clinics		121
	Delivery beds per 100,000 population		26.9*
	Hospitals performing CS		11
Staffing	Obstetricians per 100,000 population		17.7*
	Midwives per 100,000 population		6.2*
Hospital fees	NVD	County hospital	800 RMB
		Township hospital	580 RMB
	CS	County hospital	3000 RMB
		Township hospital	2000 RMB

Source: Study County Health Bureau; *Bogg et al. 2010

2.6.4 Maternal and infant health in study county

There is no data available for the maternal mortality rate in the study county. However, in Anhui province the rate is 41 per 100000 live births in 2005 (United Nations Economic and Social Commission for Asia and the Pacific, Health Bureau of Anhui Province 2008). It reduced dramatically from 100 per 100000 live births in 1990 to 48 in 2000, and has shown a slower reduction since then (ibid). The main causes of death are haemorrhage, hypertension and amniotic fluid embolism (ibid). Most maternal deaths occurred at the county level hospitals (35%), township hospitals (20%), provincial or city hospitals (16%) and on the way to a facility (14%). The remaining maternal deaths occurred in the village clinic (3%), at home (5%), and other places (7%) (ibid).

The mortality rates for infants, neonates and children provided by the county health bureau are much lower than the national rural rates. However, caution is needed when using county health

bureau data as it is collected from facilities where financial and verbal punishments may be given for poor health outcome statistics. Discussion with research staff in Anhui Province indicates that the actual neonatal mortality rate to be estimated at 15 per 1000 births and infant mortality rate to be 20 per 1000 births.

2.6.5 Utilisation of maternal health care in the study county

Utilisation of maternal health care services is shown in Table 2.9. The majority of women give birth in health facilities in the study county, reflecting the central and local government strategy of promoting facility based delivery. The CS rate is very high at 46%, and much higher than the national figure for rural areas. Almost half of women received their first antenatal examination in the first trimester and 59% received the government recommended 5 antenatal, which are equal to and greater than the national rural figure respectively. The rate of only 4% of women receiving a visit by a health-care provider during the postnatal period is much lower (52% and 70%) than the rates of postnatal care utilisation reported by other studies in rural China (Ministry of Health China 2005; Zhijun et al. 2008). However, they have included visits to hospitals and telephone calls made by healthcare providers to women. Although telephone calls can provide some support to women, early identification of problems through clinical examination (WHO 1998) and detailed exchanges of information cannot be done through telephone calls.

Table 2.9: Maternal and infant health and health care indicators for the study county and national rural areas in 2005 /2006

Indicators		Study county	National rural areas*
Maternal and health infant	Maternal mortality rate (per 100000)	41‡ (Anhui province)	52
	Neonatal mortality rate (per 1000)§	9	15
	Infant mortality rate (per 1000)§	13	22
	Under 5 mortality rate (per 1000)§	3	26
Utilisation of services	% of facility based deliveries¶	99%	84%
	% of CS¶	46%	26%
	% of women receiving 5 or more antenatal examinations¶	59%	36%
	% of women receiving 1st antenatal examination in 1st trimester¶	49%	49%
	% of women receiving 3 or more postnatal examinations ¶	4%	52%

* All data for national rural areas data sourced from MOH China 2005

§ Data from Study County Health Bureau 2005

¶ Data from Household survey in study county -- CHIMACA project 2006, not published.

‡No data is available for maternal mortality rate in study county. Anhui province data is from United Nations Economic and Social Commission for Asia and the Pacific, Health Bureau of Anhui Province.

2.6.6 Maternal health programmes in the study county

The Reduction of Maternal Mortality and Elimination of Neonatal Tetanus programme, funded by the Central government, was introduced in 2005 to the study county and other counties in Anhui province. The programme consists of training health care staff, visits by obstetric experts to township hospitals, health education for women, financial assistance for poor women, development of an emergency centre and referral system and provision of equipment to township hospitals.

2.7 Socio-cultural context for MCH

2.7.1 Gender Inequality

The situation of women in China has improved significantly since 1949. Education and labour force participation of women have increased, while harmful practices (such as foot-binding of young girls) have been abolished and patriarchal norms have weakened (Zuckerman et al. 2000). However, there is growing concern that the gap between men and women is widening again in the wake of China's rapidly changing economic, social and political conditions.

In rural areas, men usually assume leadership and decision-making roles (Asian Development Bank 2006). Women's lack of power in decision making has compromised their ability to negotiate their rights and interests in resource allocation in households and villages. This has implications for women's utilization of health care.

Practices thought to have been eradicated during the Mao era have been re-emerging, including female infanticide and feticide, trafficking in young girls and women and prostitution (Zuckerman et al. 2000; Asian Development Bank 2006). Women are also underrepresented in the political system and legal equality may not be respected in practice at the local level (DfID 2010b). As more rural men than women seek employment away from their villages, an increasing number of households are de facto headed by women who must now run the farm and the household (Li 2004; Asian Development Bank 2006). This dual role in household and farming work can leave women exhausted and with little time to spend on personal health including seeking health care (Wang and Li 1994; Wong et al. 1995; Wang et al. 2008b). Education achievements have increased substantially from 1990 to 2000 and gender gaps have narrowed, but are still very wide at the upper levels, with twice as many males as females with college-level or higher education (Asian Development Bank 2006). Migration of women to urban areas for employment also raises gender issues: harsh working conditions, low social status, low pay, exposure to violence and sexual harassment and poor access to health care (Asian Development Bank 2006).

2.7.2 Traditional culture of son preference

A preference for sons over daughters is not peculiar to China, but widespread in many Asian countries, for example, India, and South Korea (Gu and Roy 1995; Park and Cho 1995). There is a belief that only sons can continue the family line and sons rather than daughters are responsible for their parents in illness and old age. Prenatally son preference is realized through sex determination and sex selective abortion and postnatally through neglect and abandonment of female children, which leads to higher female mortality, through girl adoption, and a refusal to report female births (Poston et al. 1994; Hesketh and Zhu 2006).

Anhui province is one of the places in China where a strong preference for males has persisted in spite of political and economic changes (Bannister 2004). In a recent survey, the sex ratio at birth was found to be as high as 130 in three provinces in China, including Anhui (Zhu et al. 2009).This has been influenced by the One Child Policy, and the availability of sex selective technology (Gu and Roy 1995; Ding and Hesketh 2006). In Anhui Province the One Child Policy allows a second child if the first child is a girl or if parents with one child experience "hardship", the definition of which is open to interpretation by officials (Zhu et al. 2009).

2.7.3 Cultural beliefs about childbirth

In China, the one month postpartum is called *zuo yuezi*. The literal translation means "doing the month". Traditionally, a woman remains at home during this period and her behaviour in relation to diet, activity and hygiene is determined by tradition. The theory behind TCM underlies some of these beliefs and practices (Holroyd et al. 1997; Chen 2001). Health is seen as harmony between *yin qi* and *yang qi;* and illness an imbalance between the two forces (Chen 2001). Pregnancy is a *yang* state, but during childbirth the woman loses heat and becomes *yin*. The behaviour around diet, activity and hygiene that comprise "doing the month" is to restore the equilibrium (Pillsbury 1978; Holroyd et al. 1997; Lauderdale 1999; Kartchner and Callister 2003). A study in one province showed that many of the practices carried out in "doing the month" were adapted and when they were examined individually most fell into the categories of having benefit and no effect on health (Raven et al. 2007). "Doing the month" continues to be an important ritual in the lives of these families.

2.7.4 Political and social control

To understand the relationships between doctors and patients and officials and rural residents, it is necessary to look at the complex situation of social and political control within China. Confucianism has been the dominant ideology in Chinese philosophy since the Han Dynasty and has directed social, political, educational, and moral thoughts in Chinese society (Tsai 2001). It teaches the proper

relationship of people to one another. It is the basis for veneration of ancestors and respect for elders (Kemp, no date). Common values include filial piety – the respect and often reverence to parents; conformance to society and family norms; family recognition through achievement; lack of self-centredness and a focus on the family or society (Kemp no date; Liou et al 2000). Maintaining harmony within the family is of paramount importance and saving face by agreeing with those of higher social status is widely practised (Pillsbury 1978). There is an underlying obedience to authority, with doctors and officials having high status within society (Cong 2004).

2.7 Conclusion

This background chapter illustrates the complex Chinese context to this study. I have summarised the key areas relevant to the study in the box below.

- There has been much progress over the last two decades in reducing maternal, child, infant and neonatal mortality
- Disparities in mortality rates still exist between rural and urban areas and between and within regions
- The health care system is complex, highly regulated and hierarchical, but without effective quality assurance systems
- Fragmented maternal health care service delivery with many levels and types of facility providing delivery services
- Establishment of the Law on Maternal and Infant Health Care has raised the profile of maternal and child health in China
- The "one child policy" includes restrictions on family size, late marriage and childbearing, and the spacing of children
- NCMS covers delivery care but reimbursement varies across counties
- Public resources allocated to fund social services in rural areas are insufficient to ensure access to a quality essential package of maternal health care
- Health care facilities must rely on themselves to cover operational costs and therefore focus on more profitable services, such as investigations, CS and drugs
- The CS delivery rate has increased over time in both urban and rural areas
- Limited numbers of qualified staff together with inadequate support and incentive systems hamper the delivery of quality services
- Little investment is given to maintaining the skills and knowledge of staff through training and support

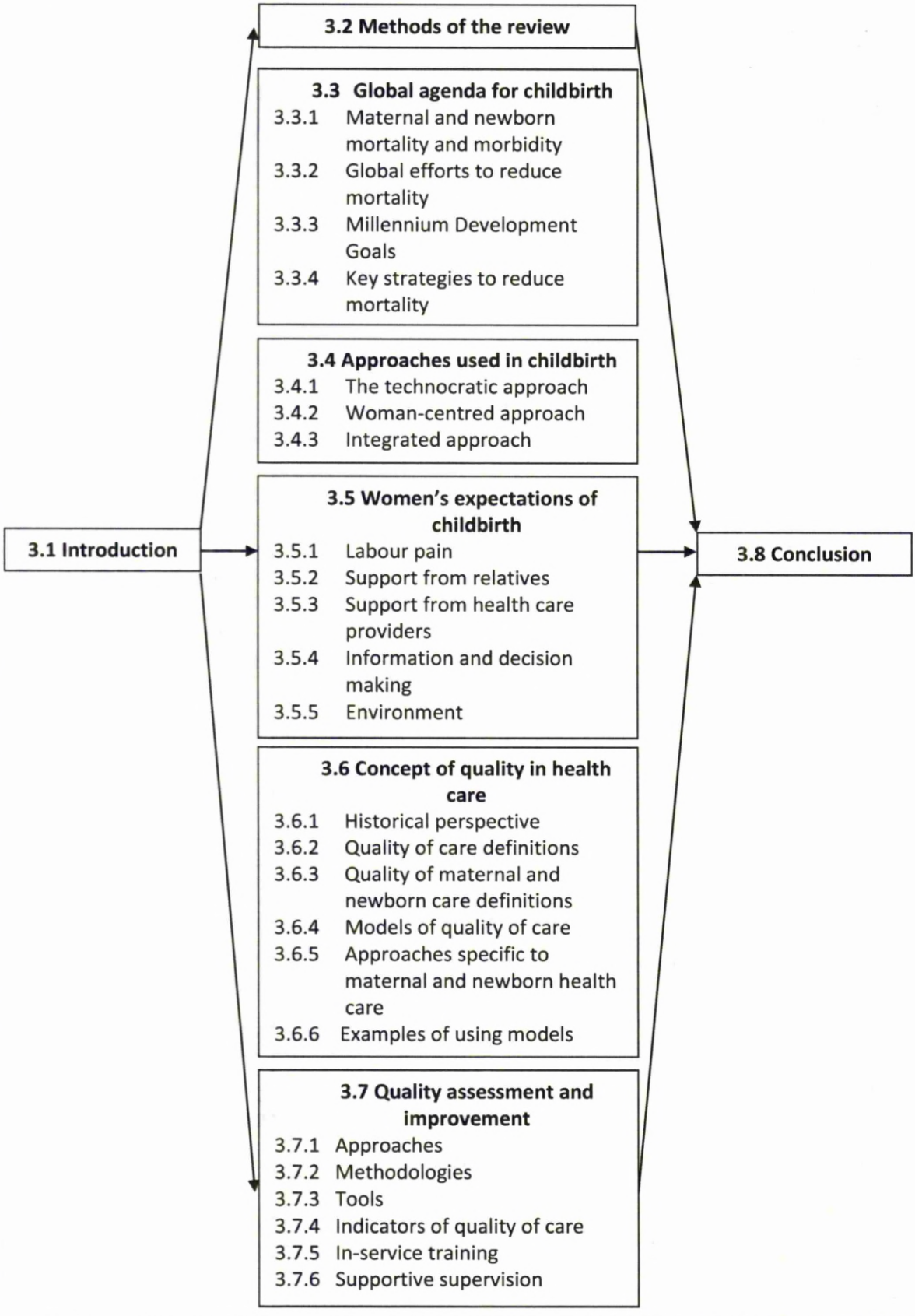
Chapter 3: Literature Review

3.1 Introduction

In this chapter, I present findings from the review of literature surrounding quality of care in maternal and newborn health.

The chapter is arranged in 5 sections. Section 3.2 decsribes the methods used for conducting the review. Section 3.3 is an overview of the global agenda for childbirth. Section 3.4 presents a picture of the approaches applied to maternal health care. Section 3.5 reviews women's expectations of childbirth. Section 3.6 describes the concept of quality in health care with specific reference to maternal and newborn health. Section 3.7 is a review of the ways to assess and improve quality of maternal and newborn health care. Finally there is a summary of the key findings from the literature review, including a description of the quality of literature included in the review. Figure 3.1 gives an overview of the chapter.

Figure 3.1: Overview of chapter



3.2 Methods of literature review

This is a narrative literature review organized thematically. The purpose of the literature review was to gain a thorough knowledge of the literature surrounding the subject of the thesis: quality of maternal and newborn health care. This was carried out to inform the design of the study.

I reviewed the literature on quality of care, and specifically, ways to assess and improve quality of maternal and newborn health care. I included published journal articles including reviews, primary research, PhD theses, as well as reports from key international agencies and governments, policy documents, and other grey literature.

To identify published literature I performed electronic searches of the following databases: Scopus, Medline and Web of Science. I developed a comprehensive search strategy using the following search terms, independently or in combination, from 1966 to the present day: for quality ("quality of care," "quality assurance," and "quality improvement") with those for the field of interest ("maternal health," "safe motherhood," or "obstetrics;" "newborn" or "neonatal;" and "developing countries" or "resource-poor settings") to identify published articles on quality of care in maternal and newborn health and approaches, methodologies, and tools for quality improvement in maternal and newborn health care. Additional articles and reports were obtained from databases of organizations working in maternal and newborn health, maternal and neonatal health programs, conferences or meetings, and experts in the field. References were also identified from the reference lists of papers and reports. In addition, search alerts were set up on Medline database and selected journals, allowing for an ongoing identification of relevant publications throughout the study period.

From the lists of citations generated from the searches, I selected literature that described or reported definitions and models of quality of care used in health and in particular, maternal and newborn health care approaches, methodologies, and tools to improve the quality of maternal and newborn health care in low-income countries. I screened the citations found in the searches for relevance by reading the titles and abstracts. I then scrutinized the full text of these articles for their relevance. A number of articles were excluded because they did not provide information on either a definition, model or approach to quality of care.

The findings are presented in themes arising from the literature: global agenda for childbirth; approaches used in childbirth; women's expectations of childbirth; concept of quality in health care; and quality assessment and improvement.

3.3 Global agenda for childbirth

Maternal and neonatal mortality and morbidity continue to be challenges throughout the world. There have been significant global efforts to reduce maternal and newborn mortality and morbidity worldwide in the last few decades. Inclusion of maternal and newborn health in the Millennium Development Goals focused international and national communities on this neglected area. Strategies to reduce maternal and neonatal mortality and morbidity focus on SBA and EmOC.

3.3.1 Maternal and neonatal mortality and morbidity

It is estimated that between 350,000 and half a million women die of pregnancy-related causes worldwide every year and 99% of these occur in the developing world (Hogan et al. 2010). A maternal death is the death of a woman while pregnant or within 42 days of termination of the pregnancy, irrespective of the duration and the site of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (WHO 2011). Over 80% of these deaths could be prevented or avoided through actions that are proven to be effective and affordable (Khan et al. 2006). Maternal deaths are not uniformly distributed throughout the world, and obstetric risk is highest in sub-Saharan Africa (Ronsman et al. 2006). Maternal deaths are the tip of the iceberg, and many more women are estimated to suffer pregnancy-related illnesses (9·5 million), near-miss events (1·4 million), and other potentially devastating consequences after birth (Say et al. 2004; WHO 2005a).

In addition an estimated 4 million neonatal deaths occur each year, accounting for 36% of deaths in children aged less than 5 years with 99% of these happening in Africa and South Asia (Lawn et al. 2005). A neonatal death is a death occurring in the first 28 completed days of life (WHO 2011). More than two thirds of newborn deaths will have occurred by the end of the first week after delivery, with up to one-half of all newborn deaths occurring in the first 24 hours (Lawn et al. 2005). The picture of numbers of stillbirths is equally grim. At least 2.65 million stillbirths were estimated worldwide in 2008 with 98% occurring in low-income and middle-income countries (Lawn et al. 2011).

3.3.2 Global efforts to reduce maternal and neonatal mortality: historical perspective

In 1985, attention was focused on the horrific risks pregnancy posed for women in developing countries: maternal and child health programmes were almost exclusively for the benefit of the child; and half a million women die each year from obstetric complications (Rosenfield and Maine 1985).This led to the global Safe Motherhood Initiative (SMI) to reduce maternal mortality being launched in 1987 in Nairobi, Kenya.

The 1987 Nairobi conference led to the establishment of the Safe Motherhood Inter-Agency Group. By the time of the International Conference on Population and Development (ICPD) in 1994, every world region had held a safe motherhood conference, and safe motherhood was firmly established as a core component of reproductive health (UNFPA 1994; Starrs 2006). The ICPD was a landmark conference which defined reproductive health rights and called for universal application of these rights and sexual and reproductive health care (including maternal health) to be available to all, including adolescents, by 2015 (UNFPA 1994).

The SMI focused on the need to improve women's status, educate communities, and strengthen and expand core elements of maternal health at the community and referral levels. Funding and support was poured into two strategies: antenatal care with a focus on screening women to identify those at risk of complications; and training of traditional birth attendants to improve delivery care at the community level (Starrs 2006).

In addition, the SMI focused on maternal death as a multi-sectoral problem, with many social and economic factors contributing to women's poor health before and during pregnancy, their vulnerability to life threatening complications and limiting their ability to seek and receive good quality care. However, attempting to address all these complex and deeply rooted factors frequently resulted in large national action plans for safe motherhood that were complicated and expensive. Donors were unwilling to support these massive undertakings, and there was often no clear leadership within countries (Maclean 2010).

At the conference to mark the 10th anniversary of the SMI, two key action messages acknowledged the failure of the antenatal and training TBAs strategies. These two messages of "every pregnancy faces risks" and "ensure skilled attendance at delivery" helped donors and governments to prioritise interventions designed to increase women's access to professional medical care, especially for life threatening complications (Starrs 1998). Ensuring access to and availability of SBA and EmOC that is effective and of good quality are key strategies to help reduce maternal and newborn mortality and morbidity (Bullough et al. 2005; WHO 2005a). These two strategies are presented in section 3.3.4.

3.3.3 Millennium Development Goals

At the turn of the century, 190 countries signed up to the Millennium Development Goals (MDGs), with maternal health and survival being included, reinforcing its global significance (United Nations 2000). Neonatal health was included in MDG 4 with its focus on child survival. MDGs 4 and 5 have defined and measurable indicators and targets to be achieved by 2015. They provide the framework for international and regional communities to work together to reduce child mortality and improve

maternal health, and also allow the monitoring of progress made as a result of the implementation and scale-up of priority interventions. See table 3.1 for the targets and indicators for MDGs 4 and 5.

Table 3.1: Millennium Development Goals 4 and 5

MDG 4: Reduce Child Mortality
Target: • Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate **Indicators:** • Under-five mortality rate • Infant mortality rate • Proportion of 1 year-old children immunized against measles
MDG 5: Improve Maternal Health
Target: • Reduce maternal mortality ratio by 75% between 1990 and 2015 **Indicators:** • Maternal mortality ratio • % of births attended by skilled health personnel
Target: added in 2007 • Achieve by 2015 universal access to reproductive health **Indicators:** • Contraceptive prevalence rate • Adolescent birth rate • Antenatal care coverage (first visit + 4 visits) • Unmet need for family planning

United Nations 2000

The Partnership for Maternal, Newborn and Child Health (PMNCH) was launched in September 2005 when the world's three leading maternal, newborn and child health alliances joined forces. These organizations were: the Partnership for Safe Motherhood and Newborn Health; the Healthy Newborn Partnership; and the Child Survival Partnership. Amongst other activities, this partnership is responsible for tracking the progress of countries towards meeting MDGs 4 and 5 (PMNCH 2011).

Progress between 1990 and 2010 was reviewed in coverage of 26 key indicators in 68 priority countries. Progress remains mixed with some countries being on track to meet MDG 4 and many others reporting accelerating progress in the past decade, whereas in a few countries progress has decelerated. Although there has been a reduction in maternal mortality ratios (Hogan et al. 2010), more progress is needed if MDG 5 is to be achieved. Inadequate progress in reduction of maternal deaths is closely linked to inadequate reduction of newborn deaths, underlining the link between MDGs 4 and 5. Coverage of skilled birth attendance increased in 12 countries, whereas others had little or no improvement. There is also variation across and within the 68 countries in coverage of other maternal interventions such as antenatal, emergency obstetric, and postnatal care, indicating that the needs of many women are not being met (Bhutta et al. 2010).

3.3.4 Key strategies to reduce maternal and neonatal mortality and morbidity

Skilled birth attendance

In 1999 a joint WHO/UNFPA/UNICEF/World Bank statement called on countries to "ensure that all women and newborns have skilled care during pregnancy, child birth and the immediate postnatal period" (WHO 1999). Skilled birth attendance has been defined as the process by which a woman is provided with adequate care during labour, delivery and the early postpartum period (Safe Motherhood Inter-Agency Group 2000). It consists of two essential components: skilled health personnel and an enabling environment.

A skilled attendant is defined as "an accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" (WHO 2004a).

The enabling environment includes adequate supplies and equipment, transport and effective communication systems, as well as broader factors including the political will, policy and socio-cultural influences, education and training of skilled attendants at pre-service and in-service levels, supervision and deployment (Graham et al. 2001; Adegoke and van den Broek 2009). WHO described the "enabling environment" as a well functioning health system (WHO 2004a). Table 3.2 describes the key constituents of the enabling environment.

Table 3.2 Key constituents of an enabling environment for skilled birth attendance

Enabling environment for skilled birth attendance

• Regulatory frameworks and policies that protect the public, and support the provision of effective maternal and newborn health care and allow skilled attendants to provide all necessary care, including where required essential life-saving skills.
• Standards and protocols that define high-quality maternal and newborn health care.
• Adequate human resources and management systems. This includes:
  o sufficient skilled attendants with all the necessary skills deployed where they are needed
  o satisfactory pay scales and career advancement opportunities
  o continuing education opportunities to maintain and upgrade skills
  o supportive supervision mechanisms to ensure skilled attendants can continually assess their own practice and obtain assistance in dealing with complicated cases, where they feel they are reaching the boundaries of their competence
• Availability of all essential drugs, supplies and equipment and existence of mechanisms to replenish drugs and supplies and maintain equipment.
• Availability of and established procedures for maintaining facilities and infrastructure.
• A working transport and referral system to ensure timely access to higher level of care, especially in an emergency.
• Financial resources sufficient to ensure the provision of effective care, including transportation and emergency care.
• Functioning mechanisms for quality improvement that ensure and evaluate the effectiveness of the system, including practitioners' as well as women's and community's satisfaction with the care provided.
• Functioning linkages between the health services and the community to sustain communications with community members.

WHO 2004a Making pregnancy safer: the critical role of the skilled attendant. A joint statement by WHO, ICM and FIGO. WHO, Geneva.

An increase in the proportion of deliveries with skilled attendance has been identified as an important approach to reduce maternal mortality and morbidity in developing countries (Hussein et al. 2004). There are several reasons for this. Firstly, women's lives can be saved when major obstetric complications are identified early and are promptly and effectively managed. As most maternal deaths occur around the time of childbirth and cannot be predicted, having a skilled person attend the deliver who is functioning in an enabling environment will reduce maternal mortality. Secondly, where countries have been able to reduce maternal mortality, they have been able to improve women's access to skilled health professionals (Hogberg et al. 1986; Loudon 1993; de Brouwere et al. 1998; van Lerberghe and de Brouwere 2001). Thirdly, programmes which focused on training of Traditional Birth Attendants failed to show reductions in maternal mortality (Bergstom and Goodburn 2001; Pathmanathan et al. 2003; Sibley and Sipe 2004). A recent systematic review indicated that perinatal and neonatal deaths were significantly reduced with interventions incorporating the training, linkage, and support of traditional birth attendants (Wilson et al. 2011). A

non significant reduction in maternal mortality was also observed. However, with a complex set of interventions it is not possible to separate the effect of enhanced support for traditional birth attendants and linkage with healthcare institutions, from that of other components in achieving these improvements. They concluded that strategies that incorporate the training and support of traditional birth attendants, in areas where there is poor coverage of skilled birth attendants, may help to achieve the MDGs 4 and 5 (ibid).

The International Confederation of Midwives and the International Federation of Gynecology proposed a target, for developing countries, of one skilled birth attendant for every 5,000 population (WHO 2004a). This means that a skilled attendant can be expected to attend 200 births every year, depending on the local birth rate. Current data show that while many richer countries have near universal coverage, just slightly over 50% of all births in developing countries take place with a skilled attendant, with variations across regions (Stanton et al. 2007).

However, there are issues with identifying who is a skilled birth attendant. The indicator used to measure the percentage of deliveries attended by skilled birth attendant in each country uses data from demographic and health surveys and similar sources, relying on women recalling the type of birth attendant. It also implicitly assumes that anyone categorised as health personnel qualifies as a skilled attendant. A study which measured the competence of health professionals who typically attend hospital and clinic based births in four countries against WHO Integrated Management of Pregnancy and Childbirth Guidelines, found that providers answered 56% of the knowledge questions correctly and performed 48% of the skills correctly (Harvey et al. 2004). They concluded that a wide gap exists between current evidence-based standards and current levels of provider competence.

Emergency Obstetric Care

Availability of Emergency Obstetric Care (EmOC) coupled with Newborn Care (NC) is a key strategy that if implemented will reduce maternal and neonatal mortality and morbidity (WHO 2004a; Koblinsky et al. 2006; Obaid 2007; WHO 2009).

The majority of maternal deaths result from five complications that are well understood and can be readily treated: haemorrhage, sepsis, eclampsia, obstructed labour and complications of abortion (Khan et al. 2006). There are existing effective medical and surgical interventions that are relatively inexpensive to treat or prevent these complications. For an estimated 15% of all women, complications will be unexpected, and life-threatening unless she has access to EmOC (WHO 2009).

Two levels of EmOC can be distinguished. A basic emergency obstetric care (BEmOC) facility should be able to offer all of the functions 1–7; and a comprehensive emergency obstetric care (CEmOC) facility should be able to offer all 9 functions, shown in Table 3.3. International agencies recommend a minimum of four facilities functioning at BEmOC level and one facility functioning at CEmOC level per population of 500 000 (WHO 2009).

Table 3.3: Signal functions used to identify basic and comprehensive EmOC services

Basic EmOC	Comprehensive EmOC
1. Administer parenteral antibiotics	Perform signal functions 1–7, plus:
2. Administer uterotonic drugs	8. Perform surgery (e.g. CS)
3. Administer parenteral anticonvulsants for preeclampsia and eclampsia	9. Perform blood transfusion
4. Manually remove the placenta	
5. Remove retained products (e.g. manual vacuum extraction, dilation and curettage)	
6. Perform assisted vaginal delivery (e.g. vacuum extraction, forceps delivery)	
7. Perform basic neonatal resuscitation (e.g. with bag and mask)	

Having the skills to recognise and then respond effectively to such unexpected events is a key part of a skilled attendant's role. Sub-optimal care in many cases contributes to maternal and neonatal deaths and this includes inability of available staff to recognise and manage complications of pregnancy and childbirth in a timely and effective manner (Fauveau and de Bernis 2006; Pattinson 2006; Global Health Workforce Alliance and WHO 2008).

Manuals have been developed, describing care for women and newborn babies during pregnancy, childbirth, postpartum and newborn periods as well as life saving skills which are used to train health professionals (WHO 2003; WHO 2006; van den Broek 2007). A review of quasi experimental, observational historical studies plus analysis of trends in maternal mortality rate concluded that there is strong evidence to support EmOC being a critical component of any programme to reduce maternal mortality (Paxton et al. 2006b).

Indicators to measure the availability, utilisation and quality of EmOC services have been developed (WHO 2009). Studies have shown that there are problems with the availability, utilisation and quality of EmOC services. Data from 13 countries indicate that the most likely functions to be reported are administration of oxytocics and antibiotics. The least likely function to be reported is assisted vaginal delivery. Many of the facilities surveyed did not have the infrastructure to perform operations or provide blood transfusions (Bailey et al. 2006). CEmOC facilities are usually available to meet the recommended minimum number for the size of the population, whereas BEmOC facilities are

consistently not available in sufficient numbers, both in countries with high and moderate levels of maternal mortality (Paxton et al. 2006b). Issues with provision include availability of staff, training, competence and confidence in performing various services, availability of supplies and equipment, no functioning theatre, clean water, electricity or adequate waste disposal (Bailey et al. 2006; Moyo and Liljestrand 2007; Kongnyuy et al. 2009a).

3.4 Approaches used in childbirth

There are two main approaches to childbirth: the technocratic or medical approach and the woman-centred approach. A review of each of these approaches is followed by a critique and suggestions for an alternative approach.

3.4.1 The technocratic or medical approach

The dominant cultural paradigm for childbirth across the world is the technocratic or medical approach. It constructs birth as a situation of inherent risk requiring expert technical management (Jordan 1993; Davis-Floyd 1994; Walsh et al. 2004). This approach to childbirth was developed to remedy the situation of high maternal and neonatal mortality and morbidity. Medicalisation was accompanied by a movement of childbirth from the private arena into the public domain along with a highly technological approach with routine hospital procedures, to ensure the safety of mother and baby (Jordan 1993; Ram 1994). Even in countries where efforts have been made to humanise birth, recent evidence indicates that the technocratic model remains strongly entrenched (Downe et al. 2001; Hildingsson et al. 2003; Crabtree 2004; Mead 2004). This is despite the fact that high rates of maternal and infant mortality no longer occur in most Western countries. In contrast, the high rates of maternal and infant mortality existing in many developing countries may provide a clear justification for the introduction of a way of birthing which is predicated on physical safety (El Nemer et al. 2006).

The justification for the medicalisation of childbirth, in some part, lie with the belief that the female physiology was flawed and in need of correction (Martin 2001). This is further promoted by the Cartesian separation of mind and body central to the evolutionary of bio-medical discourse, the body becoming the object of dissection and examination and an understanding of childbirth based on comparing the woman's body with a machine (Garcia et al. 1990). This is reflected in the language frequently used such as "incompetent cervix" and "failure to progress" (Hunter 2006). The view that the female body is defective encouraged the introduction of drugs and obstetric procedures to regulate and control labour and birth (Walsh 2010). Pregnancy may also be seen in western society as overlapping the borders of health and illness. As such, 'normal' childbirth requires

medical control in order to guarantee safety through monitoring which will enable intervention at the earliest sign of pathology, since risk prediction and selection is not possible (Van Teijlingen 2005).

Decreasing rates of maternal and infant mortality and increasing rates of CS, instrumental delivery and intrapartum interventions characterise this approach (El Nemer et al. 2006). Several studies have indicated that the technocratic approach to childbirth is being followed in different settings in middle and low income countries (Kabakian-Khasholian et al. 2000; Khalil et al. 2004; El Nemer et al. 2006; Barclay 2008; Harris et al. 2009). Observations suggest that the western medical model is not only being imposed in these situations, but is being implemented in a more extreme fashion than in its countries of origin (Goldberg 2001). Many of the procedures used in the name of safety have been shown by research to be harmful (Enkin et al. 2000; Gupta et al. 2004; Reveiz et al. 2007). Furthermore, this medicalised approach to childbirth influences how women perceive their births and the choices they make (Lazarus 1997).

3.4.2 Woman-centred approach

Since the 1970s there has been a backlash against the medicalisation of childbirth in the west, with the re-emergence of natural birth (Oakley 1984). The beliefs underlying this model are founded on the idea that 'normal' childbirth is 'natural' childbirth. The overwhelming majority of pregnant women have a normal and safe childbirth with little or no medical intervention, and that those women who are not expected to have a 'normal' childbirth can be predicted and selected out (Van Teijlingen 2005). Humane care from this perspective means empathic and kind care, based on relationships of equality, openness and trust. This needs to be sustained throughout the labour and birth experience and especially when complications arise (Walsh 2010). This approach relates to the holistic and humanistic approaches described by Davis Floyd (table 3.4) in that women's emotional state, their values, beliefs, and sense of dignity and autonomy during childbirth are recognised.

3.4.3 An integrated approach

Davis-Floyd (2001) presents three paradigms of health care that heavily influence contemporary childbirth. The technocratic model stresses mind-body separation and sees the body as a machine; the humanistic model emphasizes mind-body connection and defines the body as an organism; and the holistic model insists on the oneness of body, mind, and spirit and defines the body as an energy field in constant interaction with other energy fields. Based on many years of research she describes the principles of each paradigm, summarised in table 3.4.

Table 3.4: The technocratic, humanistic and holistic models of medicine (Davis-Floyd 2001)

Technocratic model	Humanistic (biopsychosocial) model	Holistic model
Mind / body separation	Mind-body connection	Oneness of body-mind-spirit
Body as a machine	Body as an organism	The body as an energy system interlinked with other energy systems
Patient as a object	Patient as a relational subject	Healing the whole person in whole-life context
Alienation of practitioner from patient	Connection and caring between practitioner and patient	Essential unity of practitioner and client
Diagnosis from the outside in (curing disease)	Diagnosis and healing from the outside in and the inside out	Diagnosis and healing from the inside out
Hierarchical organisation and standardisation of care	Balance between the needs of the institution and the patient	Networking organisational structure that facilitates individualised care
Authority and responsibility inherent in practitioner, not patient	Information, decision making and responsibility shared between patient and practitioner	Authority and responsibility inherent in each individual
Super valuation of science and technology	Science and technology counterbalanced with humanism	Science and technology placed at the service of the individual
Aggressive intervention with emphasis on short term results	Focus on disease prevention	A long term focus on creating and maintaining health and wellbeing
Death as defeat	Death as an acceptable outcome	Death as a step in a process
A profit driven system	Compassion driven care	Healing as the focus
Intolerance of other modalities	Open mindedness about other modalities	Embrace of multiple healing modalities
Basic underlying principle: separation	Basic underlying principle: Balance and connection	Basic underlying principle: connection and integration
Type of thinking: Unimodal, left brained, linear	Type of thinking: Bimodal	Type of thinking: Fluid, multimodal, right-brained

There are dangers in having polarised approaches to childbirth. Walsh (2010, p.489) explains that "proponents have a tendency to take up contrasting views that birth should either be medicalised or natural, childbirth physiology is inherently faulty or trustworthy, hospital birth is safer than home birth and so on." There are dangers with each approach in terms of birth outcomes, for example lack of medical care when needed or too much intervention. In addition, professionals may become polarised, causing conflict and occupational stress (Lyndon 2008).

Researchers have called for recognition of the multiple ways of seeing childbirth and finding ways to accommodate these views (Kabakian-Khasholian et al. 2000; Floyd-Davis 2001; El Nemer et al. 2006; Walsh 2010). El Nemer et al. (2006) suggests that women should be offered maternity care that combines western technology, used appropriately, with the traditional care and respect for the individual which is embodied within the local cultural and societal beliefs. Davis-Floyd (2001) promotes the weaving together of elements of each of the three paradigms she described to create an effective system of care. This could be constructed through the application of appropriate technologies, in combination with the values of humanism and the individuality of holism.

3.5 Women's expectations of childbirth

Childbirth expectations and beliefs are complex and influenced by culture, previous experience, kinship, and interaction and learning from female relatives and friends. Maternal childbirth expectations and beliefs play an important role in not only determining a woman's health care behavior but also her response to her birth experience (Barclay et al. 1997; Gibbins and Thomson 2001; Ho and Holroyd 2002).

Although there have been studies on women's beliefs, experiences and perceptions of childbirth care in some resource poor settings, most of this research has been retrospective (Kaeswam et al. 2003; Kim-Godwin 2003; Maimbolwa et al. 2003; Raven et al. 2007). Studies exploring women's expectations of the childbirth experience and care were mostly conducted in the global north. There is a dearth of literature about women's expectations of childbirth care in the global South. However what literature there is, points to several key areas.

3.5.1 Labour pain

Expectations and fears about labour pain, as well as how to cope with pain were areas that emerged from the literature. In Jordan, a survey of women identified that most expected their overall childbirth experience to be frightening, very long, difficult and painful (Oweis and Abushaikha 2004). Antenatal women in Calcutta India expected labour to be painful with most being ready to tolerate it as a natural phenomenon (Hug et al. 2008). A study of womens' expectations about labour pain in South Africa found that they have limited knowledge and have received little antenatal education about labour pain and methods of analgesia (Ibach et al. 2007). Most women expected labour pain, but underestimated its severity. The majority were highly motivated to deal with childbirth, although some were anxious, and a few women expressed fear. Some women considered pain a positive feature of labour and opposed the idea of relieving it, perhaps reflecting traditional values in which labour pain is welcome, the expression of pain is frowned upon, and successful bonding is dependent on the experience of pain in labour (Ibach et al. 2007). In a qualitative study exploring women's expectations of childbirth in three cities in Turkey, women commonly reported fear of labour pain (Sercekus and Okumus 2009). They expected labour to be painful, and did not expect, although expressed a need, to have support to manage this pain.

3.5.2 Support from relatives

Expecting support from husbands or other relatives was an important aspect of care (Ip et al. 2003; Kao et al. 2004; Wild et al. 2010). In Taiwan, expectant couples were asked through a structured questionnaire about their expectations of childbirth. They highlighted the role a husband can play in

providing support to women during labour (Kao et al. 2004). Women in Hong Kong expressed high expectations of support from their relatives (Ip et al. 2003). In Timor Leste, women emphasised the importance of physical, social and emotional support during labour, birth and postpartum period (Wild et al. 2010). Many women actively resisted hospital delivery for normal birth because they could not access this social support.

3.5.3 Support from health care providers

The literature identified that women expected to receive adequate support from health care providers during labour (Kao et al. 2004; Oweis and Abushaikha 2004). Women expected humane, professional and courteous treatment from health professionals (D'Ambruoso et al. 2005). All women expressed a desire to have staff with a positive attitude which included giving reassurance, encouragement and politeness, provision of mosquito nets, patience and tolerance. El Nemer et al. (2006) identified women's need for social support which enabled them to feel emotionally secure and cherished during childbirth. Support from health care providers was also expected in the form of receiving respect, special attention and kind manners as well as good medical care (Cindoglu and Sayan-Cengiz 2010). Women in a study in Turkey expressed a fear of being treated badly by health care providers, being shouted at and being left alone without any support (Sercekus and Okumus 2009).

3.5.4 Information and decision making

Receiving and understanding information from health care providers and participating in decision making were also key expectations (Kao et al. 2004; Oweis and Abushaikha 2004). A study in Ghana found that women expected midwives to provide guidance and advice during labour (D'Ambruoso et al. 2005). In Timor Leste, having female midwives and doctors, as well as continuity of care provider was an important consideration when deciding to use health services (Wild et al. 2010).

3.5.5 Environment

A safe and comfortable environment for labour and delivery was another expectation identified in the literature. In Ghana, women expected a reasonable standard of physical environment with regard to level of noise, orderliness and sanitation (D'Ambruoso et al. 2005). The condition of health facilities was very important when women and families were deciding where birth should take place (Wild et al. 2010). Cleanliness of the facility, having a private space for pregnant and postnatal women separate from sick patients, and having enough space for families to stay with women were expected (Wild et al. 2010).

3.6 Concept of quality in health care

3.6.1 Historical perspective

Many of the current concepts and models of quality of care have a strong historical background and are derived from work in industry. Therefore an overview of how the concept of quality has evolved over time and introduced into clinical care is derived from the literature.

The idea of guaranteeing quality is not new. In the tomb paintings of the ancient Egyptian city of Thebes, concern for the quality of manufactured goods is evident where a man inspects bricks and rejects defected ones. Industrial quality assurance has developed from the craftsman's pride in her/his capacity to please customers by exploiting each new technique for the production and distribution of goods and services. The increasing size and complexity of modern organisations has led to an emphasis on the management of quality and in particular on the importance of people in ensuring the production and delivery of quality goods and services (Ellis and Whittington 1993).

Approaches for quality assurance in industry were introduced into health care practice in the late twentieth century. Ellis and Whittington (1993) suggested that the basic characteristics of quality assurance from industry and manufacturing can be applied to health care. These characteristics include: specification of standards; development of techniques for the appraisal of standards; adoption of a cyclical model of review and improvement; involvement of consumers; consideration of relationships between quality and costs; and the recognition of the value of positive organisation and quality management.

3.6.2 How is quality of health care defined?

In order to improve the quality of healthcare, it is first necessary to have an understanding of what quality is. Defining and therefore measuring quality of care has tended to focus on biomedical outcomes. An earlier definition indicates this: "the application of medical science and technology in a manner that maximises its benefit to health without correspondingly increasing the risk" (Donabedian 1980, p.5).

An important distinction between the quality of the actual care and the expected quality of care based on standards is made in this definition: quality of care is the performance of interventions according to standards that are known to be safe, that are affordable to the society and that have the ability to produce an impact on mortality, morbidity and disability (Roemer and Montoya-Aguilar 1988). Another definition makes it clear that quality of care is a means of closing the gap between desired and actual health outcomes: "the degree to which health services for individuals and

populations increase the likelihood of desired health outcomes and are consistent with current professional practice" (Institute of Medicine 1990, p.21).

Some definitions are more inclusive and address user and provider satisfaction, social, emotional, medical and financial outcomes as well as aspects of equity and performance according to standards and guidelines. Wilson and Goldsmith (1995, p.231) describe quality of care as: "the sum of its four components: technical quality (measured by patients' health status improvement), resource consumption (measured by the costs of care), patient satisfaction (measured by patient perception of the subjective or interpersonal aspects of care), and values (measured by the acceptability of any trade-offs that must be made among the three previous outcomes)".

3.6.3 How is quality defined in the area of maternal and neonatal health care?

Defining quality of maternal and neonatal health care poses some extra challenges with specific dimensions related to maternal and neonatal health, which need to be considered. Several definitions and frameworks have been developed.

Defining quality in the context of maternal health, Hulton et al. (2000, p.4) incorporated the concept of both effective and timely access, and of reproductive health rights:

> "quality of care is the degree to which maternal health services for individuals and populations increase the likelihood of timely and appropriate treatment for the purpose of achieving desired outcomes that are both consistent with current professional knowledge and uphold basic reproductive rights".

In this definition two important components of care are taken into consideration: the quality of the provision of care and quality of care as experienced by users. The use of services and outcomes are the result not only of the provision of care but also of women's experience of that care. Provision of care may be deemed of high quality against recognised standards of care but unacceptable to the woman and her family. Conversely, some aspects of care may be popular with women but may be ineffective or harmful to health.

Pittrof et al. (2002) suggested four elements of quality specific to maternity care. These are context specific and can change over time. They include: most users of maternity services are well; some users will develop conditions requiring a higher level of maternity care (e.g. complications of pregnancy or childbirth); maternity care is aimed at least two recipients – the mother and baby; and non-biomedical outcomes may be more important than for other areas of health care because childbirth is a culturally and emotionally sensitive area (see Table 3.5).

Table 3.5: Elements of quality of maternity care (Pitroff et al 2002)

Elements of quality of maternity care
• Most users of maternity services are well. A minimum package of care, evidence based and cost effective, should be provided to all pregnant women and their babies.
• Some users will develop conditions requiring a higher level of maternity care. Providing higher-level care should not interfere with providing minimum care to the entire population.
• Maternity care is aimed at two recipients – the mother and baby. Outcomes for both mother and baby are important and advantages and disadvantages for both need to be counterbalanced.
• As childbirth is a culturally and emotionally sensitive area, non-biomedical outcomes may sometimes be more important than for other areas of health care. Satisfaction depends on values given to specific medical outcomes which vary between cultures and individuals.

Taking into account these aspects of maternal health care, the authors developed a definition of quality in maternal health care (Pitroff et al. 2002). It included an appreciation that as women and their babies have different needs, the health systems need to respond to these needs. Clinical outcomes as well as satisfaction for both users and providers are valued. It also includes a consideration of the costs of care for the health services and how this care can be sustained over time.

The COPE (Client Oriented, Provider Efficiency) process developed by Engender Health suggested a framework for improving quality in maternal health that includes seven client rights and three staff needs (Engender Health 2001). Central to this framework are two assumptions: firstly, recipients of health care services are autonomous health care consumers or clients who are responsible for making decisions about their own health and have a right to high quality care; and secondly health care providers want to perform their duties well, but without support and resources, they are unable to provide this high quality care (see Table 3.6).

Table 3.6: COPE Framework for improving quality (Engender Health, 2001)

Clients have a right to:	Health care providers have a need for:
• Information • Access to services • Informed choice • Safe services • Privacy and confidentiality • Dignity, comfort, and expression of opinion • Continuity of care	• Facilitative supervision and management • Information, training, and development • Supplies, equipment, and infrastructure

All of these definitions identified in the literature have attempted to address the issue of acceptability of care as proposed by Fathalla (1998, p.viii): "The question should not be why do women not accept the service that we offer, but why do we not offer a service that women will accept".

3.6.4 What are the models of quality of care?

Quality can be considered using different models or conceptual frameworks, which can guide health care providers, managers and policy makers to improve health service quality. The three models most commonly used and most clearly defined in the literature are: perspective, characteristics, and systems models.

Perspectives model

This model uses the underlying principle that there are different perspectives on the quality of care (Ovretveit 1992). What does quality of health care mean for the communities and patients that depend on it, the health care providers who provide it and the managers and administrators who oversee it?

- The patient: health services meet the patients' perceived needs and expectations. Satisfied patients are more likely to comply with treatment and to continue to use the services.
- The health care provider: quality as perceived by trained providers is about technical competence concerning medical issues which patients may not be technically qualified or may be too ill to assess.
- Health care managers provide for the needs and demands of both patients and health care providers. They are responsible for resource allocation, supervision and financial, logistic and human resource management.

Characteristics model

Quality of care can be seen as comprising of different characteristics. Table 3.7 presents the characteristics of health care quality described by Maxwell (1992). Characteristics can vary in importance depending on the type of health care being provided. A process of quality assurance may examine just one of these characteristics or multiple characteristics.

Table 3.7: Characteristics of health care quality (Maxwell 1992)

Characteristics	Description
Access to care	• Geographic access - availability of transport, distance from home, travel time to health facility. • Financial access – ability and willingness to pay for services. • Organisational access - clinic hours, waiting time, human resources. • Linguistic access – ability of health personnel to communicate in local dialects. • Physical access - 'user friendly' or convenient layout of facility.
Social acceptability	• Services and personnel respect patient's cultural values, beliefs and attitudes.
Relevance	• Services reflect the needs of the individual and the local community.
Effectiveness	• Services when applied correctly produce the desired results.
Equity	• Services are provided fairly and to those who need the services most.
Efficiency	• Providing the greatest benefit within resources available and not wasting resources needlessly.

More recently, quality of health care was defined using six main characteristics: safety, effectiveness, patient-centeredness, timeliness, equity and efficiency (Institute of Medicine 2001). It is recognised that different stakeholders, (such as women, health care providers or managers) will place greater importance on different characteristics. In addition, different stakeholders will have different viewpoints on the same characteristics. For example, the timeliness of provision of antenatal care may be perceived as being good in a particular facility by the health care provider whereas women receiving the care may perceive that they waited an unacceptable length of time before being seen.

Systems model

Quality of care is related to different dimensions of the health care system and can also be measured at these different points in the system. The quality of the structure of health care services (including resources and management), as well as the quality of the actual health care activities (or process), and quality of the outcome are all measurable, and together these three constitute quality of care (Donabedian 1980):

It is important to focus on all three dimensions accepting that health outcomes are dependent on both the health structure and processes.

- Structure: characteristics of the resources in the health delivery system, for example number of qualified staff, functioning equipment, number of road worthy vehicles, policy guidelines,

and management systems. These may be easy to measure but are not always informative unless they are related to the process and outcome.

- Process: examining the process of care embodies what is actually done to and for the patient. Collection of this data depends on having good systems of recording and reporting. Process measures include things such as waiting time, being given a clear diagnosis, and examining the patient properly.
- Outcome: measurement of the effect or outcomes of care can be more difficult to carry out and not often comprehensively done. Outcome measures include for example mortality, patient satisfaction, coverage, and attendance levels.

3.6.5 What are the approaches specific to maternal and neonatal health care?

Emerging from the literature were several approaches that aim to improve health systems and services with relevance to maternal and neonatal health. These include provision and experience of care framework, reproductive health rights approach, and evidence-based medicine or practice.

Provision and experience of care framework

Hulton et al. identified 10 elements that can be used to provide a framework to assess quality in maternal health care services (Hulton et al. 2000). Six elements are related to the provision of care (human and physical resources, referral system, maternity information system, use of appropriate technologies, internationally recognised good practice, and management of emergencies) and four elements are related to women's experience (human and physical resources, cognition, respect, dignity and equity, and emotional support).

Reproductive health rights approach

Quality of care is an essential component of any programme that upholds the basic principles of a reproductive health rights approach. The rights based approach to reproductive health recognises a woman's right to the following:

- regulate her fertility safely and effectively by conceiving only when desired, by terminating unwanted pregnancies, and by carrying wanted pregnancies to term;
- remain free from disease, disability or death associated with her sexuality and reproduction; and
- bear and raise healthy children (Germain and Ordway 1989).

Rights-based approaches to reducing maternal and newborn deaths have focused on the right to a safe delivery and women's access to and use of skilled birth attendance and EmOC when needed (Hawkins et al. 2005). Ensuring that these obstetric care services exist and are financially and physically accessible has been considered as a 'right-based approach to maternal care' (Freedman 2001; Hawkins et al. 2005). Ensuring that health care providers are accountable to women who seek care is another such approach (Freedman 2001).

A common reason why women delay coming to hospitals, and why there may be delays in their care, revolve around health worker attitudes to, and treatment of, women and childbirth (D'Oliveira et al. 2002). Evidence suggests that there are procedures specific to childbirth in an institutional setting that women dislike or fear and which may inhibit utilisation (Xu et al. 2001). It is recognised that good quality of care should afford a woman dignity in childbirth and avoid those aspects of care that are disrespectful or unnecessary.

Evidence-based care

Over the last 20 years, there has been a shift towards evidence-based medicine, defined as the conscientious, explicit and judicious use of contemporary best research evidence in making decisions about the care of individual patients (Sackett et al. 1996; Enkin et al. 2000; WHO 2005b). An important source of evidence-based knowledge is research synthesis, which provides a critical evaluation and summary of reliable research on the benefits and harms of health care interventions. Examples of research synthesis in the area of maternal and newborn health are the Pregnancy and Childbirth Cochrane Database and the WHO Reproductive Health Library.

The process of interpreting evidence and using it to improve practice and policy and therefore the quality of care is complicated. In the literature, a variety of strategies to change the behaviour of health professionals have been reviewed, such as continuing medical education or dissemination of printed or electronic materials on evidence-based care. Passive dissemination of evidence alone, such as didactic lectures, is often not effective in changing provider practice. Interventions that promote active engagement of participants, such as interactive workshops, audit and feedback and education outreach visits are more likely to be effective (Jamtvedt et al. 2006; O'Brien et al. 2007; Forsetlund et al. 2009). There is emerging evidence that audit and feedback can promote engagement of health care providers through involving health care providers in the audit process, and can be further enhanced when quality improvement teams are established in facilities (Supratikto et al. 2002; Kongnyuy et al. 2008a). This not only helps ensure ownership of the findings

but also encourages implementation of the proposed changes. Using opinion leaders to promote change also appears to be more effective (Doumit et al. 2007).

3.6.6 Examples of using quality models in maternal and neonatal health care

Several studies have applied the perspectives model to examine the perceptions of women as well as health care providers of quality of maternal health services (Tautz et al. 2000; Hundley et al. 2002; Langer et al. 2002). Differences in perceptions of quality in terms of the following components were identified: information being given, values attached to care and interventions, and outcomes. There is a need for further research to explore the differences in providers' and women's perceptions and how this information can be used to improve the quality of care. These studies also identified that it was important to recognise and respect these differences when making decisions about what care is delivered. Policymakers and programme managers need to be cognisant of the fact that a key determinant of acceptance and sustained use of health services is women's own views on the quality of these services. Similarly, in order to promote positively health care providers attitude and commitment to providing good quality care, the perspectives of health care providers need careful evaluation before the introduction of new models.

The framework developed by Hulton and others was used for a situation analysis of quality of care within institutional maternity services in urban India (Hulton et al. 2007). This enabled a simultaneous study of the two inter-related aspects of care — women's experiences of care and the provision of care. This facilitated the accumulation of evidence, which highlighted examples of sub-optimal and unacceptable care, such as lack of essential drugs, the use of inappropriate procedures that are not evidence-based, women being left unsupported, evidence of physical and verbal abuse and births occurring in hospitals without a health professional in attendance (Hulton et al. 2007). Pitchforth et al. (2010) assessed quality of care in labour wards in Ethiopia. In interviews with service users, experiences of care and views on areas for improvement were explored, whereas with providers' perceptions of quality of care, barriers to provision of care and priorities for improvement were identified. Bringing these two perspectives together provided a more holistic view of quality and this was used to develop comprehensive strategies to improve the care.

Although the models described can be used separately in assessing and improving quality of care in maternity services, as well as health services in general, a more holistic view of quality can be gained from using components of these identified models in combination. A framework defining quality of maternal and newborn health care using perspectives, characteristics, dimensions of the system and the elements of quality of care for maternal and newborn health is presented in Table 3.8, adapted from a framework developed for quality of health care in the Health Care Quality Assurance Manual

by Liverpool School of Tropical Medicine in 1995. In clinical settings, this framework can be used to assess the characteristics of quality of care at different points within the health system, and at the same time from the different perspectives such as service users, service providers and managers. For example, the components can be used to guide the development of standards or criteria for care, which are used to assess and improve the quality of care; when studies are designed to explore the perceptions and experiences of care amongst service providers and users, these components can be used to inform the development of topic guides and questionnaires. This framework or model can be used as a basis for developing quality improvement strategies and activities, and incorporating quality into existing programmes. In this study, I used the systems and perspectives models to assess and analyse the quality of delivery care. This is described in more detail in section 4.2.1.

Table 3.8: Typology of quality of health care

Model	Quality of structure	Quality of process	Quality of outcome
Dimensions of health system	• Policy • Resources • Organisation • Management system	• Service delivery	• Outputs • Health status
Characteristics of quality	• Accessibility • Availability • Affordability • Relevance to need • Goodness of amenities • Equity • Sustainability	• Appropriateness • Acceptability • Technical competence • Safety • Goodness of interpersonal relationship	• Coverage • Effectiveness • Efficiency • Health impact • User satisfaction
Perspectives of quality	Client quality <-> Professional quality <-> Management quality		
Elements of quality	• Human and physical resources • Referral system • Information system	• Use of appropriate technologies • Internationally recognised good practices • Management of emergencies	• Experience of care

Adapted from Health Care Quality Assurance Manual, LSTM 1995.

3.7 Quality assessment and improvement in maternal and newborn health care

The concept of Quality Assessment consists of defining quality of care, selecting indicators for measurement, collecting data, analysing and interpreting results. It is the first step to Quality Assurance, which is an effort to change or improve the current level of care based of the measures of quality (Larson and Muller 2002). Total Quality Management (TQM) is 'a management approach for an organization, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization

and to society' (Livingstone 2005). The emphasis on Continuous Quality Improvement (CQI) aspects has shaped the perception of quality as a continuous process of change, and not a one-time event.

In the following section, the terms "approaches," "methodologies," and "tools" are used to classify ways to assess and improve the quality of care. Approaches are seen as underlying the methodologies and tools. A methodology is defined as a set of practices used to explore the quality of care. Tools are defined as the instruments used to collect data on quality. Many tools for measuring quality will additionally act as interventions to improve quality. Training and supervision are included are reviewed as ways to improve the quality of care.

3.7.1 Approaches

Developing a culture of quality

When developing a culture of quality in facilities and the wider health system, it is important to involve all members of staff—from management to the support staff—in order to create an awareness of and commitment to quality. This will also help create ownership of any QI program that is introduced (Lin 2000; Kelley et al. 2002). The establishment of a culture of quality can enable staff to view patients as partners in care and promotes a more respectful attitude between staff and patients. A focus on systems and processes is maintained. Poor quality is often a function of weaknesses in the system and its operational processes or of problems in implementing such processes, rather than being the fault of individuals (Bouchet et al. 2002; Umar et al. 2009). By emphasizing this aspect, a culture of improvement and quality, rather than a culture of blame, is developed.

Where QI has been successful, the culture of quality within facilities has been developed over a period of time. An example of this is seen in Zambia (Bouchet et al. 2002), where, over a period of 5 years, senior staff established structures and built capacity for QI throughout the country, generated enthusiasm for QI, and initiated teamwork on quality of care issues among motivated health staff. To create these structures and build capacity, healthcare providers were trained in QI and a national network of coaches was established to support the activities at each facility. However, the sustainability and expansion of QI were threatened by a shortage of trained personnel at the central level, the lack of a national policy on QI, and limited QI expertise in the districts.

Another example is seen in Yemen (Umar et al. 2009), where a culture that values QI was developed in a steady manner, starting with a consultation with local stakeholders. Quality goals were established by taking the available resources and structures into consideration and by building step by step on achieved successes.

Using QI champions or leaders

Leaders are individuals who have vision and can motivate people to follow and build that vision, who can set an example for others, and who promulgate the values and goals of the organization. Quality improvement requires the cultivation of leadership qualities among a range of managers at different levels in the organization. The impact of successful QI leaders is evident in programs in Honduras and Zambia (Lin 2000; Bouchet et al 2002).

In Honduras, faster results were achieved if facility managers took an active role in QI planning and activities, for example by being a member of the QI team and by being part of the maternal death review process (Lin 2000). The focus was on finding solutions rather than on identifying barriers to providing good-quality care. For example, multiple solutions were identified to address water shortage at a hospital: digging another well, inserting wider pipes, and installing water pumps. By contrast, in facilities where leaders did not provide active support to QI activities, such gains were not made and the focus continued to be on identifying obstacles to implementing QI including the lack of resources and the need for private sector support. Although such barriers do exist in resource-poor settings, an attitude that looks beyond obstacles and searches for creative solutions could create an atmosphere in the organizational culture that promotes change.

In Zambia, Central Board of Health leaders initiated QI activities throughout the country (Bouchet et al. 2002). At the district level, coaches were trained to provide support and motivation to facility-level QI teams. However, having only a small number of QI leaders at the central level made it difficult to expand the QI process. Careful selection of coaches and adequate support for their activities was also necessary to ensure that regular visits were made. The degree of coaching support to the teams seemed to depend on the willingness and ability of individual coaches and on the availability of adequate resources such as transport facilities for coaching visits.

Establishing QI teams

Quality improvement focuses on participation and teamwork. The impact of QI activities is most powerful when team members are able draw on the participation, experience, and knowledge of major participants and stakeholders. The more team members are involved in identifying problems, developing solutions, and solving problems, the more they will take responsibility for suggesting and making improvements in their work. Quality is not the product of a sole individual, but a product of working together and of valuing one's own work as well as that of others.

In Honduras, QI teams were established to improve the quality of obstetric care in facilities (Lin 2000). Improvements were seen across most aspects of obstetric care including monitoring of labor,

neonatal care, and postnatal care. When addressing maternal mortality, the QI teams identified transport as a major barrier for women to access EmOC. The QI teams established a network of cars in the community for the transfer of the women. The improvements were further enhanced by coordination and information-sharing between QI teams in other facilities and districts. Kelley et al. (2002) assessed the ability of QI teams in Morocco to identify problems, prioritize and select key problems, analyze the causes for these problems, develop solutions, implement the solutions, and evaluate their actions. This evaluation revealed that team members were highly motivated in their QI work and good at identifying and analyzing problems, but required more support in developing solutions.

3.7.2 Methodologies

Standards, guidelines, and protocols

Standards, guidelines, and protocols are widely used to standardize and improve the quality of maternal and neonatal health care and to ensure safety for patients and healthcare providers. Standards have been defined as "a means of describing the level of quality that healthcare organizations are expected to meet or aspire to" (Department of Health 2004). The performance of healthcare providers and health services can be assessed against written standards of care, which are usually formulated and agreed by authoritative bodies, such as professional associations, ministries of health, WHO, or alternatively by health institutions for the care within the institution.

Guidelines are key recommendations on the delivery of health care based on the best available evidence and expert opinions. Guidelines may be used directly or, preferably, may be translated into standards and protocols before use.

A clinical protocol consists of instructions based on the best available evidence and expert opinions on the diagnosis and management of an illness, injury, or condition. Protocols are often made available at the level of clinics and wards to guide clinicians in the delivery of health care.

Using existing national and international guidelines, healthcare providers and managers in Malawi developed standards for postpartum hemorrhage (Kongnyuy and van den Broek 2009). Subsequently, the healthcare providers conducted an audit of facility-based care using these standards. By including all cadres of staff who provide maternal and newborn care in this setting in the development of the standards, ownership and sustainability were promoted. Equally important was the involvement of managers and policy makers in the process as this facilitated the implementation of the recommendations and the mobilization of resources where this was required.

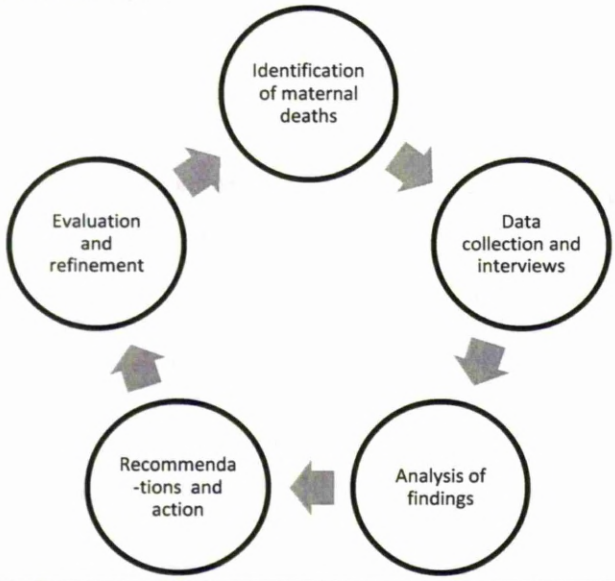
Studies looking at the development of guidelines (Belizan et al. 2007; Turner et al. 2009) found that healthcare providers were positive about the potential of guidelines to improve and standardize practice. However, this in itself was not enough to change practice (Belizan et al. 2007; Turner et al. 2009). Several barriers can prevent or inhibit the process of guideline development. These include time constraints, lack of awareness and understanding of the process, difficulties in searching for evidence, and problems in ensuring the involvement of different cadres of staff and patients. The translation of evidence into context-specific and user-friendly formats often requires additional resources, support, and skills.

Audit

Several types of audit are currently used in low- and high-income countries. These include maternal and perinatal death audits, confidential enquiries into maternal and perinatal deaths, reviews of severe acute maternal morbidity ("near-miss" cases), and criterion-based (or standards-based) audits.

A maternal death audit (MDA) is an in-depth investigation of the causes of maternal death and of personal, family, or community factors that may have contributed to it (WHO 2004b). The process involves 5 main steps, namely identification of maternal deaths, data collection and interviews, analysis of findings, recommendations and action, and evaluation and refinement (Figure 3.2). There are 3 types of MDA, which can be applied separately or in combination: community-based maternal death audit; facility-based maternal death audit; and confidential enquiry into maternal deaths. An MDA may also be expanded to include perinatal deaths (Pattinson et al. 2009).

Figure 3.2: Maternal death audit cycle



Maternal and perinatal death audits help to identify specific areas of service that need change and provide examples of care that is "substandard." Most publications that describe the findings of maternal and perinatal death reviews do not, however, describe the process of implementing change or document the effect of death audits on service use and maternal or newborn health outcomes (Mbaruku and Bergstom 1995; Dumont et al. 2006). Yet, where evidence is available, it indicates that conducting maternal death reviews results in observable changes in clinical practice through the use of QI teams in hospitals (Supratikto et al. 2002; Kongnyuy et al. 2008a). A study from Malawi (Kongnyuy et al. 2008a) showed that MDAs and standards-based audits increased the use of EmOC services and decreased the number of maternal deaths from acute obstetric complications. However, the study did not evaluate whether these improvements were brought about by the combination of both types of audit or by either type alone.

There are challenges to conducting an MDA (Kongnyuy and van den Broek 2008a; Supratikto et al. 2002). These include fear of repercussions, lack of anonymity during audit sessions, resistance of healthcare providers to have their care evaluated by peers or to evaluate care given by peers, lack of staff commitment, and limited knowledge and skills among some healthcare providers. In addition, documentation on patient care may be absent and death reviews are time-consuming. There is often a delay in implementing recommendations, or reviews may not lead to the formulation of recommendations for change in the first place.

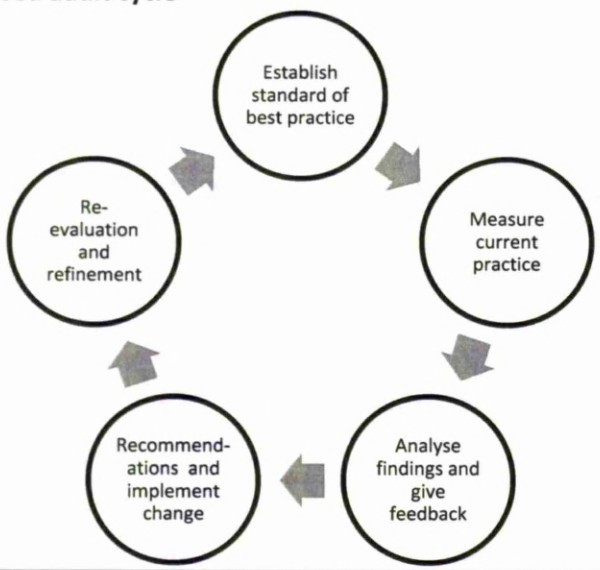
A confidential enquiry is an anonymous investigation of maternal deaths occurring at a regional or national level to identify the causes of and factors associated with these deaths. This may also include perinatal deaths. There are good examples (Pattinson 2006; CEMACH 2007) of how national confidential enquiries into maternal deaths have helped to identify specific problems (e.g. lack of appropriately trained staff, provision of incorrect treatments, lack of available and functioning healthcare facilities, poor staff attitude, delays in referral and inadequate supplies and equipment) in the provision of maternal and newborn health services. Findings from confidential enquiries have been used to directly inform national health policy, develop strategic plans for maternal and newborn health care, and improve service provision (Pattinson 2006). In addition, such findings have contributed to changes in training curriculums for healthcare providers and to the development of new protocols and training manuals (Pattinson 2006; CEMACH 2007). However, in many resource-poor settings, there are challenges to implementing such wide-scale enquiries, including human and financial resource constraints, lack of sustainable systems for reporting maternal or newborn deaths, and lack of political will.

The term "near miss" is used to describe a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of the termination of her pregnancy (Say et al. 2009). In the last decade, identification of cases of severe acute maternal morbidity or near-miss cases has emerged as a promising complement or alternative to the investigation of maternal deaths. Near-miss reviews can be undertaken on individual cases or on all cases occurring in 1 or more health facilities. Severe acute obstetric complications occur more frequently than maternal deaths, so are particularly useful in settings where maternal deaths are uncommon.

Near-miss reviews also create the opportunity to include the perspective of the surviving mother in the review, enabling a more comprehensive analysis (Filippi et al. 2009). However, routine implementation and wider application of near-miss case reviews has so far been limited because uniform case identification criteria are missing. A WHO working group has recently proposed such criteria and provided guidance for the implementation of near-miss reviews to contribute to the assessment and improvement of quality in obstetric care (Say et al. 2009).

A standards-based or criterion-based audit can be defined as a QI process that seeks to improve patient care and outcomes by systematically reviewing care against explicit standards, with identification and implementation of changes needed to achieve the desired standard of care (WHO 2004b) (Figure 3.3). Standards should be set with a clear objective, and structure, process, and outcome criteria need to be clearly defined. The standards and criteria for audit can be developed by expert teams or by the QI teams themselves (Kongnyuy and van den Broek 2008a). The latter enhances ownership of the QI process by those implementing the changes at service-delivery level.

Figure 3.3: Standards-based audit cycle



Studies in a variety of resource-poor setting have demonstrated the effectiveness and feasibility of using standards-based audits to measure and improve the quality of maternal and neonatal health care (Kongnyuy and van den Broek 2008b; Kongnyuy et al. 2009b). In a small audit focusing on the management of postpartum hemorrhage (Kongnyuy et al. 2009b), improvements were seen in terms of more frequent typing and cross-matching of blood groups, more frequent measurement of haematocrit or haemoglobin values, and better maintenance of fluid intake/output charts. However, the rate of fatalities caused by postpartum hemorrhage did not change. When women-friendly care was audited (Kongnyuy and van den Broek 2008b), significant improvements were noted with regard to previously agreed standards which included ensuring there was support by a companion during labour, allowing women to adopt different birthing positions, cleanliness of maternity wards, speaking to women in simple language, and ensuring privacy with curtains or screens. A review of randomized controlled studies from Uganda, Thailand, and Laos similarly showed a positive effect of audit and feedback on healthcare practice and healthcare outcomes, although the effect size was modest (Jamvedt et al. 2006).

3.7.3 Tools

The literature describes a variety of tools that can be used in QI. These include tools for data collection, such as questionnaires and checklists for the assessment of quality of care, topic guides for interviews and discussions, and observation checklists; tools to describe the process of care, such as clinical algorithms and observation checklists; and tools for collaborative work, such as force-field analysis and root-cause analysis. Table 3.9 describes each of the tools and gives examples of how they have been used in a variety of maternal and newborn healthcare settings.

In addition, the literature describes integrated models where several methods and tools are used in combination. Examples include the client-oriented, provider-efficient (COPE) process developed by Engender Health, which uses a defined framework and provides a series of tools for improving quality in maternal health (Engender Health 2003), and the Initiative for Maternal Mortality Programme Assessment (IMMPACT), which provides a set of tools to evaluate safe motherhood programs more generally (IMMPACT 2007).

3.7.4 Indicators of quality of care

Over the last decade, much attention has been given to the provision and coverage indicators for maternal health care as ways to monitor the progress at national and international levels (van den Broek and Graham 2009). The quality dimension has received less attention until recently, in part owing to the challenges of defining and capturing realistic indicators. There is currently no agreed

set of indicators to monitor the quality of maternal health care. There needs to be a standard, relevant set of quality indicators, ideally from routinely collected data, and present these in a manner that facilitates ongoing quality improvement. Monitoring the quality of care is a cross cutting theme in the UK's framework for results for improving reproductive, maternal and newborn health in the developing world (DfID 2010a). Indicators that track quality are needed, including women's experience of the service and the choices available to her, and the cleanliness of the facility.

Table 3.9: Tools for quality improvement

Type	Tool	Description	Uses
Data collection	In depth interviews and focus group discussions	Can be conducted with providers, women and their families to capture complex feelings and perspectives.	In-depth interviews were conducted with postpartum women about the care they received in hospital, their impressions of the hospital environment and any suggestions for improvement (Lomoro et al. 2002). In Ghana, Indonesia and Burkina Faso perceptions of quality were explored using interviews and focus group discussions and participant observation (Hounton et al. 2008).
	Observations	Checklists can be used to observe equipment, infrastructure, cleanliness etc.	General observation techniques are important in the assessment of basic quality indicators such as cleanliness, crowding, state of equipment and provider client interactions (Sullivan et al 2004).
	Exit interviews	Interviews are conducted as a woman exits the facility after receiving maternal health care services. They are short, held in private and obtain information on the course of the woman's labor, decision-making process, circumstances influencing the timing of presentation, choice of facility, and experience of care.	Exit interviews have been used in many settings to collect information about satisfaction with services received and to document practices used during childbirth (Sullivan et al. 2004).
	Questionnaires and surveys	Surveys can be conducted in the facilities and/or communities to identify users' and providers' experiences and views of quality of care.	A reproductive health needs assessment was conducted in rural China to gather information about women's health conditions, their perceptions and use of services (Li et al 2001).
Process description	Flowcharts	Flowcharts are used to describe the flow of patients, information, materials (e.g. flow of supplies from central pharmacy to the wards) and thought (e.g. clinical algorithms). A client flow analysis is a useful tool for analyzing client movement and staff utilization in a health facility. The health care providers then develop an action plan to help resolve the problems identified during the assessment.	Examples of its use are in Kenya, US, Nigeria, where waiting times were reduced significantly through addressing staffing problems and re-organizing services (Engender Health 2003; Campbell et al. 2010).
	Process mapping	Process maps assist workers to identify areas to intervene to improve safety and quality. This involves examining the process from a new perspective in order to discover where the greatest risks exist.	Process maps are external representations of the system and become tools for problem solving, reasoning, and decision-making about risks and improvements (Colligan et al. 2010).
	Cause–effect analysis	Cause-effect analysis does not only depict the chronological sequence of events, but also seeks to describe the causes of a condition of interest.	A cause-effect diagram can be constructed to clarify the contributing factors to maternal or neonatal mortality and severe morbidity.
	Observations	Participant or non-participant observations of processes such as antenatal examination, delivery can also be conducted.	General observation techniques are important in the assessment of provider client interactions (Sullivan et al. 2004).
	Self assessment guides	Self-assessment guides are sets of questions that help staff think about the way in which services are provided and whether adequate supervision, training and equipment are available at their facility.	These tools were used in Kenya and Guinea and improvements were made in the maternity services such as repairing of equipment, training was given to staff and leaflets about nutrition during pregnancy were given to women (Sethi and Belliard 2009).
Collaborative work	Nominal group technique	Nominal group technique is a technique to ensure equal participation among group members. Each member nominates his or her priority issues, and then ranks them.	A team of researchers in China used grassroots reproductive health workers to generate an extensive list of potential indicators and then used nominal group technique to prioritize the indicators that could be practically and feasibly obtained and measured (Mlelke et al. 2001).
	Supportive supervision	Supportive supervision aims to improve the quality of care. This approach emphasizes mentoring, joint problem solving, and two-way communication between a supervisor and supervised.	Supportive supervision can have a positive impact on the provision of care facilitative supervision to evaluate performance of health workers (Wang et al 2003).
	SWOT analysis	SWOT analysis is a method of identifying factors which promote change and factors that oppose change. It enables health professionals to participate more fully in the analysis and implementation of health care improvement. There are four	SWOT analysis was conducted with health care providers of the process of conducting maternal death audits in Malawi (Kongnyuy and van den Broek 2008a).

		dimensions: Strengths, Weaknesses, Opportunities and Threats. Strengths and weaknesses are internal i.e. characteristics of the initiative under assessment; and opportunities and threats are external i.e. environmental factors which affect the development of the initiative.	
	Force field analysis	Can analyze the opposing forces involved in change. In any situation there are both driving forces that push for change and restraining forces that act against change.	Force field analysis can be used for health promotion among adolescents since this tool provides a systematic and multilevel approach to problem assessment, resolution, and social change that is particularly appropriate for adolescents (Santos et al. 2006).
	Root cause analysis	Root Cause Analysis (RCA) is a comprehensive and systematic methodology to identify the gaps in hospital systems and the processes of health care that may not be immediately apparent and which may have contributed to the occurrence of an event. It focuses on systems and processes, not on individual performance, examines extensively for underlying contributing factors and root causes and identifies changes that could be made to improve systems and processes to prevent re-occurrence of similar events.	In Haiti, researchers and community members implemented PRA tools such as mapping, scoring, focus groups, and root cause analysis to discover perceptions of socioeconomic and health contexts of the community. They were able to identify maternal health priorities, potential resources, and offered insights into the practical implementation of research tools (MacDuffie and Depoy 2004).

3.7.5 In-service training and quality of care

Training is often used as a tool to improve the quality of care. However, training is time consuming, expensive and requires significant organisation. Furthermore, what evidence is available to say that in-service training does improve quality of care? This section looks at the evidence surrounding training and its impact on the quality of care, with a particular emphasis on maternal and neonatal health.

Some studies have found that in service training does improve the quality of care being provided (Vittoz et al. 2004; Yolsal et al. 2004; Zhang et al. 2004; Glatleider 2006). However, they also revealed that other factors such as managerial support and the environment influence the degree of impact that training has.

Other studies have identified that training on its own does not improve quality of care and in some situations may actually make it worse (Rowe et al. 2000; Vidal et al. 2001; Dick et al. 2004; Osterholt et al. 2006). Learning from these studies indicate that design and implementation of in-service education programmes should be tailored to the local situation, be conducted in conjunction with addressing barriers to change at other levels of the health system, and other interventions may be needed to improve care such as supervision, methods of quality assurance such as audit and provision of essential equipment and supplies.

There is evidence that multiple interventions, including training of health care providers, do improve the quality of care in maternal and neonatal health. Programmes in Bangladesh aiming to improve the provision of emergency obstetric care focused on elements such as renovations, procurement of equipment and supplies, training, management information systems, quality assurance mechanisms, supervision, linkages between health care facilities and community and social mobilisation activities (Gill and Ahmed 2004; Islam et al. 2006). Although these interventions greatly increased the availability and quality of EmOC services, obstacles such as inconsistent cooperation between health departments, transfer of trained clinicians and lack of incentives to work in rural areas may hinder the long term impact on quality of care. Projects in Rwanda and Peru were designed to improve the functional capacity of health facilities for the delivery of emergency obstetric care (Kayongo et al. 2006a; Kayongo et al. 2006b). A package of interventions was implemented including hospital renovations, provision of essential equipment, training of staff, supportive supervision and improvement of management systems at a referral hospital. They found that providers were more prepared for emergencies, more able to manage common obstetric complications according to evidence based practices and there was an increase in the demand for care of at facilities. They concluded several key points: competency based training methodologies are useful in increasing

staff skills and transforming attitudes and practice; sustained adoption of desired behaviours is dependent on a critical mass of trained providers; strong leadership and supervision are necessary for the implementation and acceptance of change; and collaboration with partners from referral hospitals, training institutions and ministry of health provide significant credibility to new policies and practices.

The methodology used in training has an impact on how successful it is at improving provider practice and health care outcomes. While didactic approaches may change other elements of competence such as knowledge, skills or attitudes, they have little effect on provider behaviour or health outcomes (Davis et al. 1999). In contrast, studies that used interactive techniques such as case discussion, role play, or hands on practice sessions were generally more effective. In addition, training conducted in sequence over a period of time (learn – work – learn) and provision of patient education material, flow charts, and clinical guidelines were also found to be effective (Davis et al. 1999). A more recent systematic review (Forsetlund et al. 2009) assessed the effects of educational meetings including courses and workshops, on professional practice and healthcare outcomes. They found that educational meetings alone or combined with other interventions, can improve professional practice and healthcare outcomes for the patients to a small effect and similar to other types of continuing medical education, such as audit and feedback, and educational outreach visits.

3.7.6 Supportive supervision

In 2001 WHO identified supportive supervision as a new component in the development of training interventions and advocated a move away from traditional methods of supervision. Clinical supervision has been defined as: 'the provision of monitoring, guidance and feedback on matters of personal, professional, and educational development in the context of the [doctor's] care of patients' (Marquez and Kean 2002). Supportive supervision is about 'empowerment and not control, emphasizing building confidence and self-esteem through supportive feedback' (JHPIEGO 2004a).

Supportive Supervision is facilitated through an encouraging relationship with individual health care providers. It sets expectations, monitors and assesses performance, identifies problems and opportunities in which the supervisor remains an intermediary, promoting collaboration in problem solving and linking to external resources (Marquez and Kean 2002; Ministry of Health Kenya 2005). It is an enabling and reflective process that allows in-depth reflection on clinical practice and helps to achieve quality client focused services; (Marquez and Kean 2002; JHPIEGO 2004a).

Supervision is achieved through a multilevel approach that incorporates external, internal, self and peer assessments as well as engaging with the community. Differing from traditional methods,

supportive supervision is a continuous process conducted by all involved and not just by external supervisory visits (Table 3.10). The focus of supervision changes toward activities that assess compliance to quality standards, transferring knowledge and skills, providing feedback to supervisees, identifying problems, and developing action plans (Marquez and Kean 2002). Supervisors are trained to be patient orientated and adopt approaches to facilitate change, convey support and build self confidence (Marquez and Kean 2002; JHPIEGO 2001).

Table 3.10: Differences between traditional and supportive supervision

Traditional supervision	Supportive supervision
• External supervisory visits, periodic often without follow-up of problems or decisions made. • Visits usually based around inspection of facilities, records, supplies etc. • The supervisor makes decisions and provides little feedback or reflective practice.	• Supervision is a continuous process done during routine work and in team meetings which is supported by an external supervisor. • Supervisory visits involve use of tools to allow observations of performance with comparison to set standards. • Supervisors give feedback, provide technical updates, on-site training and use data collected to identify areas for improvement. • Action is taken after joint problem solving and is then followed up by ongoing monitoring and evaluation.

A number of recent studies have commented on the use of supportive supervision in reproductive healthcare. Evidence suggests that supportive supervision empowers staff to engage in problem-solving, encourages teamwork and improves performance (Marquez and Kean 2002; Ministry of Health Kenya 2005).

Santos et al. (2006) reported on the impact of supervision following EmOC training of health professionals in Mozambique. The supervision process and monthly supervisory visits were coordinated and conducted by in-country staff with external technical assistance to model and practice supervision, thus allowing greater ownership. As part of the supervision process, data from registers were collected, reviewed and cross-checked. This improved the completion of maternity registers. With the reactivation of a maternal mortality audit committee, facility staff had more opportunities to discuss case management of complications and their own performance. The case fatality rate (CFR) reduced by almost half with significant reductions in deaths from haemorrhage, obstructed labour and postpartum sepsis. The authors concluded that the introduction of supportive supervision is a strategy that promotes on-going training and facilitates continuous quality improvement.

A study by Ronsman et al. (2001) showed that through in-service training, continuous supervision and participation in an audit system, midwives in Indonesia gained confidence and skills in the management of obstetric complications. The authors were also not able to ascertain whether any of these interventions on their own would achieve comparable results.

A review of the use and effectiveness of supervision in primary health care identified that supervision is widely recommended, but is a complex intervention and implemented in different ways. There is some evidence of benefit on health care performance, but the studies are generally limited in the rigor and follow up is limited (Bosch-Capblanch and Garner 2008). Other studies have shown that supervision can have a positive effect on health care provider performance. Supportive supervision has at least short-term effects on performance and might be appreciated by staff as a sign of organisational support, and increase their motivation (Dieleman et al. 2006). Rowe et al. (2005) found that supervision and audit with feedback was generally effective with regard to health workforce performance. Additionally, multifaceted interventions (e.g., training plus supervision), which address multiple determinants of performance, might be more likely to improve performance than single interventions (Rowe et al. 2005).

There have however, been barriers to the approach in developing countries where lack of resources and lack of accountability in the health system infrastructure has led to supervision being inadequate (Marquez and Keane 2002). Successful supervision programmes tend to be externally supported which may not be sustainable in the long term. Supportive supervision can also be more labour intensive and time is needed to train and establish supervisory skills (Marquez and Kean 2002). It is often irregular, unstructured and involves little follow up (Tavrow et al. 2002). Supervisors do not have the time to provide adequate supervision, with priority given to other activities (Marquez and Kean 2002; Tavrow et al. 2002). Supervisors may have limited skills for supervision (Rowe et al. 2005). They are typically promoted from the ranks of service providers without receiving much additional management training or mentoring in their new responsibilities (Tavrow et al. 2002). Useful tools for supervision such as checklists are not distributed widely, and their use is inconsistent (Marquez and Kean 2002; Tavrow et al. 2002). Supervisors can become discouraged because they lack support from their superiors or face hostility from the health workers they supervise as they may understandably dislike supervision that involves inspection and criticism, takes up time, and provides little of value (Rowe et al. 2005).

In order to promote effective supervision, several issues need to be addressed. Simple tools that do not dominate the supervisory encounter work best in resource poor settings (Marquez and Kean

2002). Strengthening supervision will require a variety of tools, including a reference manual for supervisors on the main components of effective supervision, supervisor self-assessment guides that are interesting and user-friendly, and a mentoring guide for trainers of supervisors (Tavrow et al. 2002; Rowe et al. 2005). Capacity building for supervision should be within a pre-existing support system (Marquez and Kean 2002). The supervisor should receive adequate training and support (Tavrow et al. 2002), with a focus on partnership building, coaching on the quality of provider–client interaction, and monitoring and self-assessment skills.

3.8 Conclusion

The literature included in this review covered a range of types of literature: peer reviewed academic papers from journals including primary research, reviews and commentaries; reports of programmes; policy documents; and books. The primary research documents, reviews and reports were assessed for quality using a framework (Qualitative Research and Health Working Group, 2002). The majority of the literature was of good quality. They provided adequate description of the study design, methods of data collection and analysis, and approaches to trustworthiness or validity and reliability.

The review of literature surrounding quality of childbirth care has revealed several important considerations:

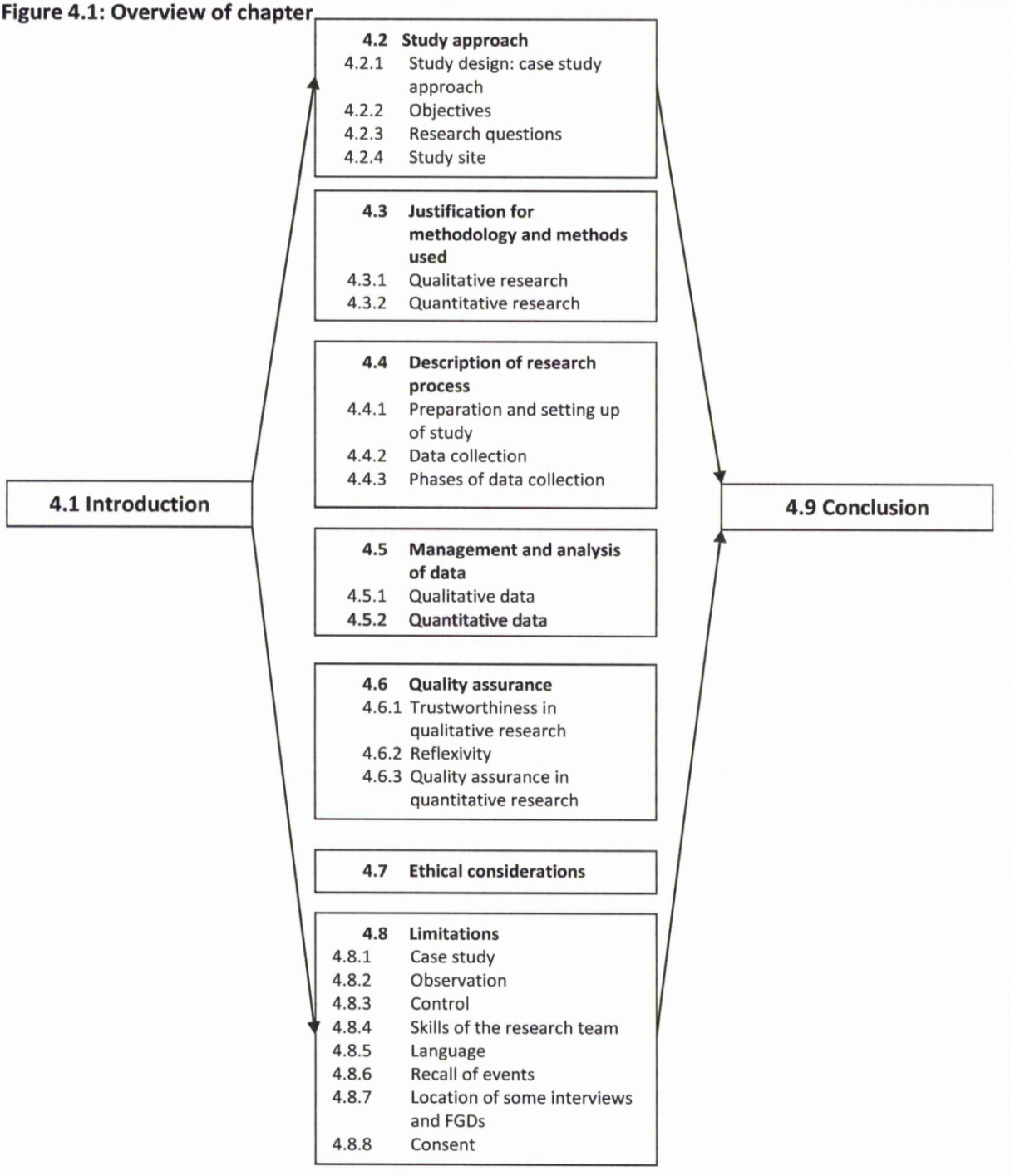
- Maternal and perinatal mortality and morbidity remain significant social and health problems in developing countries.
- The medical approach to childbirth is the dominant paradigm directing the provision of maternal and newborn health care around the world. However, there are flaws in this approach, which has led to the development of the women-centred approach.
- Access and utilisation of good quality care provided by skilled birth attendants is an important strategy to prevent deaths and improve health.
- There are several models and concepts of quality of care, with specific components pertinent to maternal and newborn health care. The perspectives and systems models will be used in framing the methodology for assessing and analysing the quality of care.
- Literature on what is quality in maternal and newborn health care is limited, with this area being inadequately researched.
- There is no agreed global set of indicators to monitor the quality of maternal health care.

Chapter 4: Methodology

4.1 Introduction

This chapter describes the methods used in this study. Firstly, the study design is described including the objectives and research questions. This is followed with a discussion of the background to the methodology used. How these methods were used, and how the data were analysed is then described. Mechanisms to assure the quality of data and ethical considerations are explained. Finally, the limitations are discussed. In this study we use the following terms: "women" represent women who have delivered in the past 12 months; and "mothers" are mothers or mothers-in-law of these women who have delivered in the past 12 months. Figure 4.1 provides an overview of the whole chapter.

Figure 4.1: Overview of chapter



4.2 Study approach

This study uses a health systems research approach. Health systems research addresses health system and policy questions that are not disease –specific but concern systems problems that have repercussions on the performance of the health system as a whole (Remme et al. 2010). It is

problem driven or question driven rather than method driven as well as being policy relevant and timely (WHO 2012). It seeks to understand what health systems are and how they operate, what needs to be done to strengthen health systems in order to improve performance in terms of health gain and wider social value, how to influence policy agendas to embrace actions to strengthen health systems, and how to develop and implement such actions in ways that enhance their chances of achieving performance gains (WHO 2012).

In this study, the focus is on quality of care which is a product of the health system. It specifically refers to the quality of delivery care, and topic of relevance for local, national and global policy makers.

By focusing on the issue or problem that is policy relevant and timely, health systems research tends to rely upon mixed methods. In this study I use a mix of qualitative and quantitative methods.

Within the health systems research approach, different approaches to the methodology for this study were considered, including a quantitative approach, rapid appraisal, ethnography and case study. The case study approach was adopted. Reasons for not adopting the first three approaches are now described.

I did not use a quantitative indicator driven approach, such as household survey and facility survey, for several reasons. This type of approach would not help us understand why the health system is functioning in the way it is, and would not draw upon the perspectives of the different actors in the area of quality of maternal and newborn health care. The primary focus of this study was to understand why the health system is behaving in the way it is. Although there are indicators for quality of care, a set for maternal and newborn health care have not been agreed globally. Tools to assess quality of maternal and newborn health care exist, for example JHPiEGO (2004b), however they have not been adapted to the Chinese context. Without adapting these tools, which was beyond the scope of the PhD in terms of resources, they would not generate data that would reflect the reality of China.

A rapid appraisal uses a group of methods to gain information about an area or topic in a fast and succinct way, such as semi-structured interviews, transect walk with observation, mapping and diagramming. It was developed in the 1970s to replace a large questionnaire survey or in depth social anthropology (Chambers 2007). There are several reasons why this approach was not used. Firstly, as very little is known about the quality of delivery care in rural China, I sought to explore this phenomenon in depth. Although the rapid appraisal approach would have generated data from wider study sites, it would not have provided an in depth understanding of quality of delivery care

from the perspectives of participants and the health system. Secondly, for the topics of interest to be probed at all, I needed to develop relationships of trust with the research team, county officials, facility managers and health care providers, and women and their families. This takes considerable time, which would not be available if the rapid appraisal approach was employed.

The ethnographic approach was an attractive option which was considered when designing the study. Its central aim is to provide rich, holistic insights into people's views and actions, as well as the nature of the location they inhabit, through the collection of detailed observations and interviews (Reeves et al. 2008). However, there were several reasons why this approach was not adopted. Firstly, this approach has not been widely used in China in the area of health care, and I was unable to convince the stakeholders of the values of this approach. Secondly, there were issues with control over time spent in the study sites with the local officials allowing me to carry out data collection for short periods of time only. Thirdly, my inability to speak Mandarin Chinese to a level required for ethnographic observations and interviews prevented me from using this approach.

Within the health systems research approach, I used a case study. This is described in the following section.

4.2.1 Study design: case study approach

This research was organised as a county level case study, using both qualitative and quantitative methodology. The case study approach allows investigation of a phenomenon within its real life context and deliberately covers contextual conditions as they may be pertinent to the phenomenon of study (Yin 2003). Case studies are used widely in health systems research for several reasons: health policy and systems experience is heavily influenced by, and is often embedded in, contextual factors that must themselves become part of the focus of inquiry (Gilson et al. 2011); allow the study of complex behaviours and relationships among health system actors; and they can generate information for policy or be used to analyse past policy experience (WHO 2012).

In this study the quality of childbirth care was described, explored and explained in the real life case of one county in rural China. This allowed for intensive study of the phenomenon of quality of childbirth care, and relied on multiple sources of evidence which converged in a triangulating fashion to draw conclusions (Yin 2003; Sandelowski 2011). I wanted to understand in depth the range of issues about quality of delivery care and how they inter-relate within a given context. A case study can use a variety of methodologies, including qualitative, quantitative, observational and or experimental research (Sandelowski 2011). In this study both qualitative and quantitative

methodologies were used to gather data from a wide variety of sources relevant to the phenomenon of study.

This study used a single case study approach. The rationale for using a single case in this study is that the county is a representative or typical case, which captured the circumstances and conditions of an everyday or commonplace situation, and in this instance, childbirth (Yin 2003). The lessons learned from this case can be informative about the experiences of childbirth in similar contexts. By providing a "thick description" of the context of the study county (Geertz 1973), I would then be able to comment on the similarities and differences with other counties, and use secondary data and broader literature to situate the findings from this study.

In a case study, a case is selected for its informational representativeness (Sandeloswki 2011). A case is a spatially and temporally defined entity constructed by researchers via a process Ragin referred to as "casing" (1992, p. 217). Researchers do not so much find cases as they define them. In this study, I created the case of one county by limiting it to 8 hospitals providing childbirth care.

In this study I applied the perspectives and health system models of quality of care (described in section 2.5.4) to the study design, data collection tools and data collection. The systems model looks at quality from the points of view of the structure of the health system, process of service delivery and outcomes for the mother and baby, and these can be further analysed using the perspectives model. Acceptance and use of services is dependent on women's views of services. On the other hand, provision of good quality care relies on the ability, enthusiasm and willingness of the health care providers to provide this care. Therefore, by respecting these differing views of quality, a more holistic view of quality of delivery care can be produced, which will enable strategies to be developed which will take into account the views of all stakeholders. Other studies have used the perspectives model of quality in health care and identified similarities and differences in views about quality (Proctor 1998; Stichler and Weiss 2000; Tautz et al. 2000; Hundley et al. 2002; Langer et al. 2002).

4.2.2 Objectives

The objectives of the study were as follows:

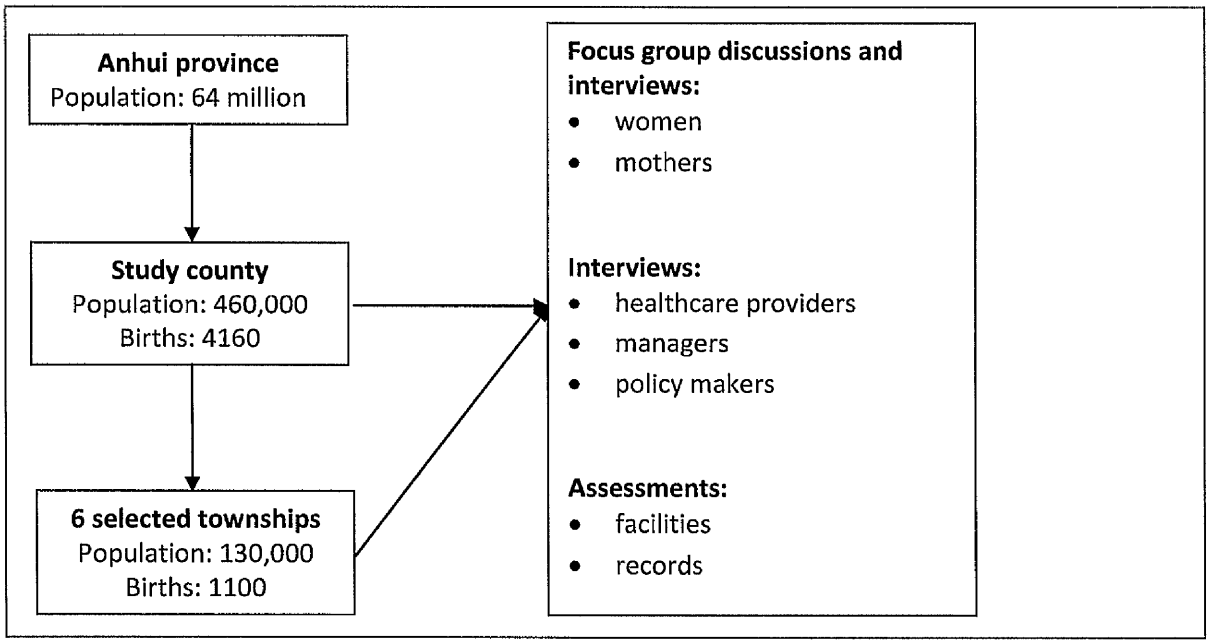
1. Describe the perceptions of users, health care providers, health managers and health policy makers on quality of labour and delivery care;
2. Assess the quality of childbirth care in hospitals using available evidence and stakeholder perceptions;
3. Explore women's perceptions of the care that they receive during childbirth;

4. Identify and analyse the factors that influence the provision of this care;
5. Develop recommendations for policy and practice.

4.2.3 Research questions

- What does quality of care in maternal health mean to women, mothers and mothers-in-law, obstetricians and midwives, hospital managers, and maternal health policy makers in rural China?
- What quality of care do women receive during childbirth in hospitals?
- What factors influence the quality of childbirth care in hospitals?

Figure 4.2: Study design



4.2.4 Study site

This study was nested in the CHIMACA study (Structural Barriers and Promoters to Good Maternal Care in China), a European Union funded project which studied structural barriers to maternal health services, including the inability to pay for maternal services, and tested different financial interventions aimed at improving access and utilisation. The CHIMACA study was conducted in two counties, in Anhui province from 2006 to 2010. The counties were based on their willingness to participate, operation of the New Cooperative Medical Scheme (NCMS), and average level of economic development for the province. No data from the CHIMACA project is used in this thesis.

The study county was selected as the site for this study. Within this county, 6 out of the 18 townships selected for CHIMACA were chosen. They were selected using the following criteria: distance from the county city (referral hospital); level of township hospital (central and basic); and socio economic status. In addition, two county level hospitals were selected: the county hospital as it is the referral centre for the county, and the Traditional Chinese Medicine hospital as it is a popular choice amongst women for delivery. These were then approved by the head of the health bureau.

Table 4.1: Criteria for selected townships for study

Township hospital	Distance from county city	Level of hospital	Socio economic status of township	Income per capita (Yuan)
A	Medium	Central	High	3290
B	Far	Basic	Low	2510
C	Near	Central	Medium	2684
D	Near	Basic	High	3069
E	Medium	Basic	Medium	2665
F	Far	Central	Low	2650

Income per capita: County Statistics Bureau, 2003. Level of hospital: County health bureau, 2007.

4.3 Justification for methodology and methods used

In this case study, both qualitative and quantitative research methodologies were used. The following section describes these methodologies and their methods, and explains the rationale for using them.

4.3.1 Qualitative research

Qualitative research methods were used to investigate the social phenomenon of childbirth in hospital, as this is experienced or understood by women, mothers, health care providers, managers and policy makers. Qualitative research generated information and concepts about this phenomenon and reflected the perspectives of the people whose experiences or behaviour or relationships I was investigating (Pope and Mays 1995; Malterud 2001). As Bryman (1988) proposed, I wanted to 'see through the eyes' of women, mothers, health care providers, managers and policy makers in order to understand their viewpoint about the quality of childbirth care. Qualitative research enabled me to describe the mundane detail of labour and delivery in order to look at this phenomenon in a new way and develop new understandings about it.

Qualitative research not only investigates behaviour or interactions from the viewpoint of the people experiencing them, but is also concerned with understanding them in their social context. It seeks to understand how they are influenced or affected by where, when and to whom they happen

(Malterud 2001). In this study, I have generated a thick description of the context and explored the factors leading to the quality of delivery care within this context.

Interviews

- *Semi-structured interviews with women*

We interviewed women who delivered in the past 12 months in the selected 8 facilities. These interviews explored what quality in childbirth care means to women, their experiences and expectations of labour and delivery care. Individual interviews were particularly useful at obtaining this kind of in-depth and contextual information about women's experiences, beliefs, perceptions and values. The interviews enabled the research team to explore reasons, opinions and attitudes behind women's answers through asking probing questions to gain a deeper understanding with more information and explanation (Britten 1995; Pope and Mays 1995).

Semi-structured interviews were used where the researchers asked the same open ended key questions related to the research objectives but followed up with more questions led by their responses or for clarification. The researchers were encouraged to be flexible in the order of questions and the ways in which they phrased the questions (Arthur and Nazroo 2003).

There were several reasons why this type of interview was applied as opposed to a more in-depth interview. First, a team of research assistants, rather than myself, conducted the interviews and I therefore needed to be very clear about the types of responses we wanted to generate and this was easier to control using more structured topic guides. Second, as there was a team of researchers, there needed to be some consistency in the approaches used and the topics covered and a semi structured interview enabled this kind of uniformity. Third, as the quality of qualitative data is known to be dependent on the skills and technique of the researchers (Patton 1990), a more structured approach helped the inexperienced research assistants to develop their skills.

When interviewing women about their experiences and perceptions of childbirth, we were concerned about the reliability of their recall of events. The birth of a child represents a significant event in the lives of all involved. For the mother, it involves pain, vulnerability, emotional stress, possible physical injury or death, and permanent role change and so it is not surprising that women tend to remember their birth experiences clearly and with deep emotion (Simkin 1992). In this study, women were asked about the actions of health care staff, interventions and the actual birth. Other studies have looked at the reliability of women's recall of childbirth events over time and found that women are accurate in their recall of their experiences. Many memories are vivid including onset of

labour, arrival at hospital, actions of health staff and partners, interventions, the birth and first contact with the baby (Bennett 1985; Simkin 1992; Githens et al. 1993; Stewart and Festin 1995; Tomeo et al. 1999; Waldenstrom 2003).

If women are asked about their feelings and reactions to birth events, then a time interval of one year can allow them to gain perspective (Bennet 1985; Simkin 1992; Waldenstrom 2003). Women may need a period of time to work through their experiences, and measures obtained in the first few months after birth may be too optimistic and less relevant in understanding possible long term effects of women's birth experiences (Waldenstrom 2003). Simkin describes a "halo effect" which is often observed when a successful and significant event takes place. Any negative undertones are temporarily overshadowed by the excitement of the moment, but over time, the event takes on more realistic dimensions, and the negative aspects are recalled more readily (Simkin 1992). Women who had delivered in the last 12 months were selected for this study, allowing good recall of events and avoidance of the "halo" effect.

- *Semi structured interviews with mothers and mothers in law*

As mothers and /or mothers-in law are often present during labour and sometimes during delivery, they were included. They also care for the women in the postpartum period. They have considerable influence over women during this time, and talk with women about what happened. They may notice more about what happens during labour and delivery and the care that their daughter received. They usually have more experience of childbirth than their daughters and therefore their knowledge and perceptions are valuable. It was therefore important to gain their perceptions about the care that women received during childbirth, as well as their understanding of quality of care.

- *Semi structured interviews with health care providers, managers and key informants*

Interviews with health care providers who work in maternal health, hospital managers and key informants were conducted in order to explore their perceptions of quality of care in childbirth, their views on the quality of care that they provide and their understanding of factors influencing provision of delivery care. Interviews were conducted as opposed to FGDs for several reasons: I wanted to generate in depth information about their views and experiences of delivery care and this would be best obtained through individual interviews; in some township hospitals there are only one or two obstetric doctors and so it is less disruptive to the hospital if interviews are conducted in the facilities themselves.

- *Paired interviews with women and mothers / mothers in law*

Paired interviews are interviews carried out with two people at the same time. They provide an opportunity for individual depth of focus but also allow participants to reflect on, and draw comparisons with, what they hear from others (Ritchie 2003). In this study we used paired interviews with a naturally occurring unit, namely, a woman and her mother or mother in law. The method of paired interview is known to have several strengths (Highet 2003). It created a more naturalistic context which facilitated a better balance in the relationship between the research team and women and mothers. Women felt more relaxed and able to talk about events with their mothers or mothers-in law being present. Some women found individual interviews intimidating as the social distance between women and university research team may be perceived as considerable. The interaction between the two respondents generated exploration of events or expectations that may not happen in individual interviews.

However, sometimes family relationships can be difficult and women and their mothers or mothers-in-law may have different perceptions. It is sometimes difficult for women in particular, to give their views. Therefore other methods such as individual interviews and focus group discussions with women and mothers and mothers in law were also held.

Focus group discussions

In the focus group discussions (FGDs), women who had delivered within the last 12 months in the selected hospitals were brought together to discuss the common issue of quality of childbirth care. FGDs were also conducted with mothers or mothers in law of these women. This method explicitly drew upon the interaction amongst participants to explore dominant and minority views about childbirth care and identify areas of consensus and disagreement (Dawson and Manderson 1993; Krueger and Casey 2000; Patton 2002). It required that the moderator was skilled in asking questions and probing in order to obtain the full range of responses from the participants.

I chose FGDS with women and FGDs with mothers as a method of data collection for several reasons. First, some women and mothers felt threatened by an individual interview. An FGD is particularly good at encouraging people when women or mothers with similar backgrounds are brought together and a more comfortable and permissive environment is created enabling them to divulge information (Kitzinger 1995). Second, women and mothers who felt they had nothing to say were able to contribute to the discussion. Third, using both individual interviews and FGDs I aimed to corroborate and compare the data and interpretations generated from the combination of methods.

Fourth, a range of views and differences of opinion can be elicited through FGDs which are difficult to obtain from individual interviews.

Sampling for interviews and FGDs

We followed the purposive sampling approach in that participants were deliberately selected on the basis of features or characteristics that enabled a detailed understanding of the topic of quality of childbirth otherwise termed as 'symbolic representation' (Ritchie et al. 2003a). It allowed us to select participants because they illustrated features in which we are interested. This enabled us to achieve a maximum variation of types of experiences within the study population, so that all issues relevant to the study were raised.

Women were selected using the criteria of delivering in the selected facilities within the past 12 months. In order to obtain the maximum variation of types of experiences within this study population, women with a range of ages, parities, education levels, types of delivery and places of delivery were selected.

Mothers or mothers in law were selected on the basis that they had daughters fulfilling the above criteria and were present during labour and/or delivery.

Health care providers were selected using the criteria that they worked in the selected facilities and they were involved in the clinical care of women during labour and delivery. They provided in depth information about the care being provided as well as their perspective on the quality of care.

Managers of the selected hospitals were chosen for interviews as they provided information about the provision of childbirth care in their facility, the management of the facility, factors influencing the provision of care such as staffing issues and their perceptions of the quality of care.

Policy makers were selected as they had a role in supervision, management and/or training related to childbirth care. As such they provided perceptions about the quality of delivery care, delivery related policies, and factors influencing quality of care.

- *Sample size*

As in other qualitative research, the sample size was purposefully kept small. There are several reasons for this. First, when data is properly analysed then there will be a point when little new evidence will be obtained from each additional field work. Saturation point was reached for all key themes. Second, we were not concerned with incidence or prevalence and therefore did not need to ensure that the sample size is sufficient to provide estimates or apply tests for statistical significance.

Third, the type of information yielded was rich in detail, and to analyse this properly, much time and resources are needed. Finally, qualitative research is highly intensive in terms of the resources it requires. It would therefore be difficult to conduct and analyse hundreds of interviews or FGDs.

Analysis of policy documents

In this study we analysed county level policy documents related to childbirth care in facilities. It has been argued that documents are sources of data that have been underutilised by qualitative researchers (Silverman 2006; Prior 2008). Lincoln and Guba (1985, p.277) suggest that documents are, 'a rich source of information, contextually relevant and grounded in the contexts they represent'. County level policy documents are a reflection of national policies. They were analysed to provide information about the guiding principles behind the provision of childbirth care. As such, they present an overview of what should be happening in the health care facilities. These documents also offer another data source to be compared (triangulated) to other sources to identify and explain consistencies and inconsistencies in reporting.

Table 4.2 summarises the qualitative research methods used and the topics covered by each method.

Table 4.2: Qualitative research methods used

Participants	Methods	Examples of topics
Women who gave birth in selected hospitals within the past 12 months	Focus group discussions Semi-structured interviews Paired interviews	Perceptions and experiences of quality of maternal health care services
Mothers or mothers-in-law	Focus group discussions Semi-structured interviews Paired interviews	Perceptions of what quality of care means
Health care providers	Semi-structured interviews	Perceptions and experiences of provision of maternal health care
Health managers	Semi-structured interviews	Barriers to provision of quality care Factors that enhance the quality of care
Policy makers	Semi-structured interviews	Mechanisms to assess and assure the quality of care
	Analysis of policy documents	Supervision of facilities; Baby Friendly Initiative

4.3.2 Quantitative research

In this study we used facility assessment, records assessments including delivery registers, delivery notes and partographs to gather quantitative data. There were several reasons why these methods were employed. First, it provided an overview of the quality of childbirth care in each facility through assessment of structures such as facility layout and resources, process of care such as the delivery

notes and partographs and outcomes of care in the delivery registers. Second, it provided some idea of the extent of certain practices being carried out. Third, this data was compared and contrasted with the qualitative data from the various sources to provide an image of quality in each facility. Employing more than one method and therefore more than one type of data is a common interpretation of triangulation or as Denzin and Lincoln suggest, using "multiple observers, theoretical perspectives, sources of data and methodologies" (1994). The validity of a study's conclusions is enhanced if the data and findings derived from one approach are qualified by another.

Facility assessments

Facility assessments were carried out because they provided contextual information about each facility which helped make sense of the data collected from other sources. Data about the quality of childbirth care was also gained through observations of the facilities and discussions with the staff. In addition, these findings helped refine the topic guides used in the interviews with women, mothers, healthcare providers, managers and policy makers.

The objectives of the facility assessment were to assess in each facility:

- current level of SBA, EmOC & NC functioning;
- numbers and cadres of staff;
- and quality of care improvement activities.

A data collection tool previously developed by the MNH Unit at LSTM was adapted for the China context. This type of assessment using this form has been conducted in several countries including Kenya, Nigeria, Malawi, Sierra Leone and Bangladesh (Kongnyuy et al. 2008a; Kongnyuy et al. 2008b; Kongnyuy et al. 2009c; Raven et al. 2010).

Using this tool, observations of the facility and discussions with the health care providers and managers were made. The tool covered the following areas: general information such as type of facility, distance to nearest referral hospital, population; services provided including antenatal, delivery, postnatal, family planning and pharmacy services; availability of equipment; EmOC and NC functioning; human resources and training done in the last 2 years; quality improvement activities; baby friendly and women friendly aspects of care; and the referral system.

Records assessments

- *Assessment of registers*

The delivery registers can provide valuable information about the numbers and types of deliveries occurring in the facility as well as outcomes of the mother and baby (Allotey and Reidpath 2000; Vallely et al. 2005; Figueras et al. 2008). A tool was developed following an assessment of what was recorded in the standard delivery registers in the county. The tool included types of delivery, twins and stillbirths; and for NVDs episiotomy, length of second stage, active management of third stage and immediate breastfeeding practices were assessed. These indicators were included as there is evidence of their benefit and harm (WHO 2006).

- *Assessment of delivery notes*

The notes for NVDs can provide information about the care that is provided for women during labour and delivery (Wagaarachchi et al. 2001; Pitchforth et al. 2010). Aspects of care can be used as indicators of quality. How well these records are kept is also an aspect of quality. The Pregnancy, childbirth, postpartum and newborn care guide for essential practice (WHO 2006) and Evidence Led Obstetric Care report (WHO 2005b) were used to develop the tool for data collection. The tool includes: type of delivery, parity of woman, sex of baby, and outcome of baby. It also included questions about the recording of birth weight, blood loss, signature, episiotomy, pubic shaving, enema, oxytocin for augmentation, intravenous fluids, oral fluids, active management of third stage, number of rectal and vaginal examinations, presence of companion, position for delivery, mobilisation during labour, antibiotics, pain relief and observations following delivery.

- *Assessment of partographs*

The partograph is a simple, inexpensive tool to provide a continuous pictorial overview of labour. It is a pre-printed form, usually in paper version, on which midwives and obstetricians record labour observations used since the 1970s. Most partographs have three distinct sections where observations are entered on maternal condition, foetal condition and labour progress, with the last section assisting in the detection of prolonged labour. The main purpose of this tool is to detect labours that do not progress normally, to indicate when augmentation of labour is appropriate, and to recognise cephalo–pelvic disproportion long before labour becomes obstructed (Philpott 1972). Detection of prolonged labour is important as both postpartum haemorrhage and infection are more common in women with long labours (Neilson et al. 2003). If correctly used, the partograph

increases the quality and regularity of all perinatal and maternal observations and serves as an early warning system of complicated deliveries.

A tool to assess the use of partographs was adapted from tools used in studies in Mozambique, Angola, Indonesia and Tanzania (Pettersson et al. 2000; Bosse et al. 2002; Fahdhy and Chongsuvivatwong 2005). The tool included 17 variables: 12 variables reflected the providers' performance in recording observations such as cervical dilatation, foetal heart rate and descent of presenting foetal part; and 5 variables reflected our evaluation of the providers' interventions.

Table 4.3 summarises the quantitative research methods used and the topics covered by each method.

Table 4.3: Quantitative research methods used

Methods	Examples of topics
Facility assessment	Availability of services, equipment, drugs, referral systems, number of staff, training, quality improvement activities.
Delivery register assessment	Number of deliveries, types, outcomes.
Delivery notes assessment	Use of episiotomy, oxytocin, antibiotics, vaginal examinations, rectal examinations.
Partograph assessment	Use or non-use, how well it is completed.

4.4 Description of research process

4.4.1 Preparation and setting up of study

Research team

I was responsible for the design, support to and quality assurance of data collection, analysis and writing up of the thesis. This included training and management of the research team. I am a midwife with several years experience of midwifery and training in developing countries. I have experience in carrying out research projects on maternal health in China, including a master's degree study using qualitative research methods. I have undergone training in conducting qualitative research through a master's degree.

The research team consisted of a professor, a senior research assistant who was a teacher and four research assistants who were masters' students in maternal and child health from the School of Public Health at Anhui Medical University. They have experience of carrying out field work in rural

areas. They have undergone some qualitative research training provided by myself in the CHIMACA project and have some experience of carrying out qualitative research.

The professor was responsible for liaison with the county government and officials and assisting with some of the data collection. He also identified the research assistants for the study. The senior research assistant was responsible for organising the field work in the county, which included communicating and negotiating with local officials. She also ensured the careful translation of documents such as the consent sheets, topic guides and transcripts of interviews and FGDs. The senior research assistant and research assistants collected the data with my close. The research assistants also undertook the transcription and translation of the recorded interviews and group discussions. The senior research assistant and research assistants assisted with the analysis of the data.

PhD supervisor Rachel Tolhurst has extensive experience in designing and supervising qualitative research, including in China, and provided technical input and quality assurance to the research team through review and discussion of the study design, selection and recruitment procedures, data collection tools and analysis process.

PhD supervisor Nynke van den Broek has extensive experience in designing and supervising research and in particular quantitative methods. She provided technical input and quality assurance through the review and discussion on the data collection tools, methods for selecting records and data analysis.

Training of research team

Training was conducted on each visit to China. The initial training on qualitative research included: background to the study; selection criteria and procedures; qualitative research methods; how to ask questions; how to translate; how to record information; data analysis; ethics and confidentiality; and data collection tools with emphasis on the terms used and how to translate them. The initial training on the quantitative research methods included discussion on the objectives of these methods, data to be collected, methods for collection, possible problems in data collection and potential solutions and the data collection tools. As the study progressed the researchers further developed the necessary skills and knowledge required for the recruitment and data collection. More training was given at the start of each phase of data collection and before each field visit. These sessions focused on discussions of previous field work; reviewing transcripts from previous field work; preliminary data analysis to highlight importance of probing; modifications to the topic

guides; issues with selection of women and mothers; informed consent process; and location of interviews and FGDs with women and mothers.

Training was also provided to the same research assistants when the CHIMACA qualitative investigations were conducted. In addition, the senior research assistant visited LSTM for three months to write a paper for publication based on qualitative data. The process of writing enabled the researcher to have a greater understanding of qualitative research data collection and analysis. She also attended qualitative research training at the National Centre for Social Research.

Access to the study site

Seeking admission to the study site for the purpose of observing it and securing access to individuals for the purpose of interviewing them was an important consideration. This was done over a period of time as I negotiated and re-negotiated access throughout the research. Success in securing access is more likely if you enter negotiations armed with connections, accounts, knowledge and courtesy (Lofland et al. 2006).

Lofland et al. explain that it is important to use and build upon pre-existing relations of trust to remove barriers to entrance (2006). The local university professor, who was a member of the CHIMACA project team, has developed good relationships with the county officials over the last few years. As a result, the CHIMACA project had already started in the county. This enabled me to negotiate further data collection for the PhD study in the county. The professor was invaluable in his negotiations with the county officials. His active involvement provided credibility and authority to the study. The professor also spent some time in the field collecting data with the research team which further strengthened our relationships in the county. I gained access to the facilities and staff through the county health bureau and access to women and families through the facility staff and village doctors.

Part of establishing connections is about providing an account of doing the research. The account needs to be as brief as possible, accessible and comprehensible to the informants and candid; and given at different times of the research and tailored to different audiences (Lofland et al. 2006). I had to explain the research to the research team, the county officials, facility managers, health care providers and women and mothers. As the research was conducted in phases, these accounts were modified and provided again, building on the trust developed in the previous phases. Showing respect and acting in a courteous manner with the research team, local officials and study participants helped to maintain good relationships.

The researcher should have enough knowledge about the study setting and population to appear competent to do so (Lofland et al. 2006). I was able to get the "lay of the land" through being actively involved in the CHIMACA project, conducting literature reviews about China and maternal health and quality of care, and previous research on postnatal health care in China.

Development of tools

I developed the data collection tools using previous experience of studies in China to help shape questions, a review of similar studies in other countries, and assistance from the supervisors. The qualitative data collection tools consisted of topic guides designed for each type of interview or FGD. A topic guide is a flexible tool which sets out key topics and issues to be covered, but does not impose a fixed structure allowing for the addition of any new issues arising. It can also act as a briefing document, a starting point for analysis, and can assist with an accountable presentation of findings. The questions should be open ended, neutral, sensitively phrased and clear to the interviewee (Patton 1987).The qualitative data collection tools were translated into Mandarin.

The quantitative data collection tools for the facility assessment, register assessment, notes assessment and partograph assessment were kept in English. Both sets of tools were modified following discussions with the research team.

4.4.2 Data collection

Qualitative data collection

- *Focus group discussions, semi structured interviews and paired interviews with women and mothers*

Initially women and their mothers were selected using the township delivery register and the maternity cards. Women usually return their maternity cards to the hospital at the 6 weeks postpartum examination and the cards are kept in a cupboard in the MCH room of the hospital. The doctor, manager and research team looked at all maternity cards and selected women who had a NVD or CS in the last 12 months in the 8 selected facilities.

However, it was difficult to identify enough women and their mothers using these sources, suggesting that we were missing some women who would fit the criteria for selection in this study. There were several reasons for this: some women do not return their maternity cards to the township hospitals; the delivery register only records women who delivered in that facility and in some facilities these numbers are very low; and women deliver at other facilities within the county. Therefore the research team, along with the county health bureau and township hospital staff

developed a list of women who had delivered in the past 12 months from a combination of sources: the delivery register, the maternity cards in the hospital and the family planning station register. Sometimes the women's telephone numbers were not recorded on the card and so the village doctor was contacted for the number. The manager or doctor from the township hospital then rang each woman on the list and asked them to be part of the study. We tried to ensure that the sample included a range of women across the key characteristics of interest to the study: primiparous, multiparous, older and younger, delivered in township and county level hospitals.

The characteristics of women and mothers are described in Table 4.4. There were no women under the age of 20 years, and most women were in the age group 21-29 years. More women were primiparous than multiparous. Both these characteristics reflect the Family Planning policy that is implemented in the study county, which encourages later marriage and childbearing, and restricts family size. The occupation refers to whether women stay in their registered home county to work (non-migrant) or go to other provinces or cities to work usually in factories or restaurants (migrant).

Table 4.4: Characteristics of women and mothers

Participants	Characteristic		Number
Women Total = 69	Age	≤ 20 years	0
		21-29 years	47
		≥30 year	21
		Unknown	1
	Parity	Primiparous	45
		Multiparous	24
	Occupation	Non migrant	36
		Migrant	33
	Type of delivery	NVD	49
		CS	20
	Place of delivery	Township hospital	41
		County level hospital	28
	Type and place of delivery	NVD in township hospital	32
		NVD in county hospital	17
		CS in township hospital	9
		CS in county hospital	11
Mothers Total = 28	Type of delivery	NVD	21
		CS	7
	Place of delivery	Township hospital	18
		County hospital	10
	Type and place of delivery	NVD in township hospital	13
		NVD in county hospital	8
		CS in township hospital	5
		CS in county hospital	2

Focus group discussions and semi structured interviews were conducted with women and mothers. Between 4 and 7 participants were included in each discussion. Paired interviews were conducted

with women and their mothers. I had intended to conduct focus group discussions separately with women and with mothers in each township. This was successful in some townships, when enough time had been given for women and mothers to organise transport and child care. However, in other townships, women arrived at different times in the day despite being asked to attend at a specific time. Many women and mothers were unwilling to wait for others to arrive, so semi structured interviews were performed. Table 4.5 shows the number of FGDs, interviews and paired interviews conducted.

Table 4.5: Numbers of FGDs, semi structured interviews and paired interviews with women and mothers

Participants	Method	Number
Women	Focus group discussion	5
	Semi structured interview	35
	Paired interview	10
Mothers	Focus group discussion	1
	Semi structured interview	14
	Paired interview	10

The focus group discussions, semi structured interviews and paired interviews were conducted in Chinese by the research team. One researcher facilitated the discussion or interview using the topic guides and the note taker took notes of the discussions and interviews, and also ensured that the tape recording was working. By conducting the interviews and focus group discussions in the local language we hoped to avoid problems of interpretation and ensure accurate meaning (Smith et al. 2008). Having an interpreter translate the researcher's questions directly can interrupt the flow of conversation and be distracting for the respondent and interviewer (Smith et al. 2008). Using the research team to carry out the interviews and discussions meant that I relinquish control of the interview. However, this was minimised by the training and support given to the team during the course of the study. An informed consent process was followed. Each participant was given the consent sheet to keep, although most left them behind. The discussions and interviews were tape recorded following consent for this procedure. All participants were given a small gift to compensate for their time. I was present for the majority of the interviews and discussions.

The location of discussions and interviews raised many issues. At the beginning of the study the discussions and interviews were conducted in the offices or meeting rooms of the township hospitals. I had asked for the FGDs to take place in more neutral places such as schools and the interviews at home. I tried to discuss this with the manager, health bureau staff and research team but they were adamant that the venue would not inhibit women and mothers from speaking. They believed that by asking them to come to the hospital it gave authority to the study and encouraged

women to participate. The managers and doctors continued to invite the women to the hospital for the investigations. However, in phase 3 of the data collection (see section 4.4.3), I was able to persuade the local staff and research team to conduct the discussions in private rooms of local restaurants and the interviews in the women's homes. Women and mothers appeared more comfortable in these environments and the data appeared to be more in depth.

- *Semi structured interviews with health care providers, managers and policy makers*

Semi structured interviews with 22 health care providers who work in maternal health and 8 facility managers were conducted in order to explore their perceptions of quality of care in childbirth, their views on the quality of care that they provide and factors within the health system which affect the quality of delivery care that is being provided in their township hospitals. In each facility obstetric doctors and midwives who conducted deliveries were identified. Tables 4.6 and 4.7 provide details about the health care providers and managers.

In phase 4, (see section 4.4.3) I carried out 3 semi-structured interviews with pharmacists in two township hospitals and one county hospital to identify the types of pain relief available in the facilities, the use of pain relief for childbirth and their views on its use.

Interviews with 4 key informants included: the director of MCH in county health bureau; the director of the county MCH station; the director of a training institute; and an obstetrician at provincial level hospital and university (Table 4.8). The director of MCH in county health bureau and director of the county MCH station were interviewed twice: in October 2008 and August 2009.

The interviews were conducted in Chinese by the research team. One researcher facilitated the interview using the topic guides and the note taker took notes of the interviews, and also ensured that the tape recording was working. The interviews with the health care providers and managers were conducted in the doctors' and managers offices in the hospital managers'. The interviews with the key informants were conducted in a private room in a local restaurant or the meeting room in the MCH department of the University of Anhui. The informed consent process was followed. Most interviews were tape recorded following consent for this procedure. Two respondents declined to be recorded and so the research assistant took notes. I was present for the majority of interviews.

Table 4.6: Characteristics of health care providers

Characteristic		Number
Type of health care provider	Obstetric doctor	15 (all female)
	Midwife	5 (all female)
	Pharmacist	3 (2 male)
	MCH worker	2 (1 male)
Place of work	County	15
	Township	10
Length of service	< 5 years	1
	5-9 years	1
	9-14 years	11
	>15 years	12
Pre-service training	Technical secondary school	15
	Medical college	10

Table 4.7: Characteristics of facility managers

	Facility	Age	Sex	Experience	Pre-service training
1	A	50	M	25 years as doctor 13 years as manager	Medical college
2	B	51	M	23 years as doctor 16 years as manager	Technical secondary school*
3	C	54	M	30 years as doctor 10 years as manager	Technical secondary school
4	D	52	M	26 years as doctor 10 years as manager	Technical secondary school
5	County	41	F	18 years as doctor 2 years as manager	Medical college
6	E	51	M	23 years as doctor 13 years as manager	Technical secondary school
7	TCM	51	M	26 years as doctor 2 years as manager	Technical secondary school
8	F	38	M	14 years as doctor 5 years as manager	Technical secondary school

#Medical college: this is a three year course

*Technical secondary school: this is a three year course at a lower level than the medical college course and requires lower admission qualifications

Table 4.8: Characteristics of key informants

Type	Age	Sex	Length of service	Education
Obstetrician from province hospital	35	F	7	Medical University
Director of county MCH station	57	M	36	Technical secondary school
Director of MCH in county health bureau	45	M	20	Technical secondary school
Director of training institute	50	F	28	Medical university

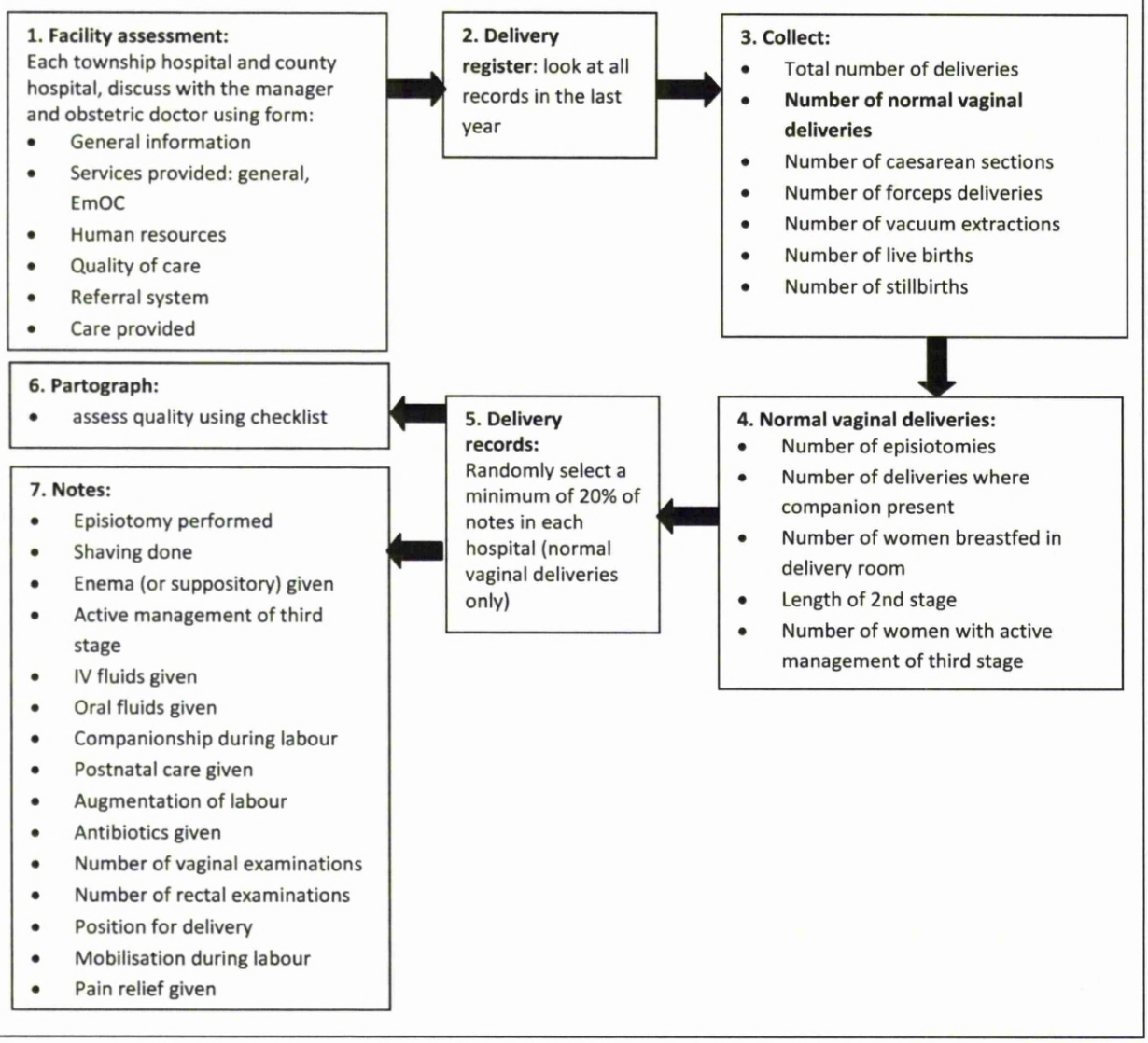
- *Policy documents*

I asked the research team and the county key informants for any government documents about maternal health care at county and provincial level. After several attempts, I eventually received several documents including policies on supervision of township and county level facilities, provision of birth certificates, the baby friendly initiative and delivery licenses. These documents were translated into English. I read the documents and summarised those relevant to this study.

Quantitative data collection

I assessed the facilities, delivery registers, delivery records and partographs as described in figure 4.3. I developed SPSS databases for these assessments.

Figure 4.3: Assessment of facility, delivery register, records and partographs



- *Facility assessments*

I carried out a facility assessment in each of the eight facilities. A member of the research team and I interviewed the head obstetric doctor using the facility assessment tool as a guide. We also observed the delivery room, MCH room, antenatal care room, theatre, pharmacy, antenatal and postnatal ward. The doctors found some questions difficult to answer and so these were addressed to the managers. Table 4.9 illustrates the numbers of assessments conducted.

- *Delivery registers*

I assessed the delivery register in each facility for deliveries in the past 1 year. The managers gave me the delivery register and I indicated the time period in which I was interested. The register was then photocopied and given to me. The entries into the register were translated. I entered the data into the SPSS database. A member of the local research team checked the data entered into the SPSS database with the photocopied registers. Any discrepancies were discussed and corrected where necessary. Table 4.9 illustrates the numbers of assessments conducted in total and in each facility.

- *Delivery records*

In each facility, I counted the number of all NVDs in the past year and selected 20% of these cases. I selected every 5th case in the register to provide a sample of cases from throughout the year. If the numbers of deliveries were below 10, I selected all cases. I then asked the hospital staff to find these notes. In the county hospital and the TCM hospital, the notes were kept in separate rooms and there was a system for numbering the sets of notes. We were not allowed to enter these rooms. In the township hospitals, there appeared to be no system and the notes were kept in cupboards in the managers' office. When the selected notes were not found, then I selected the next case in the register. Sometimes the notes had been sent to the MCH station or the county health bureau for assessment or were lost. Table 4.9 illustrates the numbers of assessments conducted in total and in each facility.

The senior research assistant firstly read the notes and identified the notes relevant to the delivery. These consisted of pre-printed forms where the details are completed by the doctor. They included a front sheet with personal details of the woman such as name, address, date of birth, length of stay in hospital; assessment when she first entered the hospital; delivery record; doctors notes including information about when she first enters the hospital, and the postnatal period; instructions for care during labour, delivery and postnatal including drugs; and maternal observation sheet for antenatal

and postnatal periods. Using the SPSS database I asked for data about each variable, the senior research assistant looked at the records and I entered the data into the database. We then checked each case in the database with the notes. Any discrepancies were discussed and corrected where necessary.

- *Partographs*

In each set of records the senior research assistant and I selected, we looked for a partograph. If present, then we assessed it using the data collection tool. I entered the data directly into the SPSS database. We then checked each case in the database with the partograph. Any discrepancies were discussed and corrected where necessary. Table 4.9 illustrates the numbers of assessments conducted in total and in each facility.

Table 4.9: Number of facility and records assessments conducted in total and by facility

Activity	Total	County	TCM	A	B	C	D	E	F
Facility assessments	8	1	1	1	1	1	1	1	1
Register assessments	1414	618	385	137	4	148	4	4	114
Records assessments	111	35	33	15	2	10	2	3	11
Partograph assessments	111	35	33	15	2	10	2	3	11

4.4.3 Phases of data collection

The data collection was carried out in four phases over a period of 20 months (see figure 4.4). This staggered approach to data collection, enabled me to reflect on the approaches, methods, tools and research team. It also allowed me to analyse the data and modify the tools, methods and approaches to data collection.

Orientation

In September 2007, I visited Anhui province to discuss the study with the local research team and officials and carry out data collection in one township hospital. We did a facility assessment and semi structured interviews with a manager, a doctor and a woman. We also carried out several exit interviews with women who were leaving the facilities following delivery. Changes were made to the methods of data collection.

Changes in data collection methods

- Exit interviews with women

I planned exit interviews with women who had delivered a live baby in the selected hospitals. These interviews would be conducted as women left the hospital by a non-clinical member of staff to provide information on practices during delivery. We did several exit interviews in the orientation phase of the study. There were many difficulties in organising and carrying out these interviews. Firstly, we were unable to identify a suitable person in the facilities to train to do these interviews. Secondly, since the numbers of women delivering in the facilities were small, placing a research assistant in the facilities was not feasible. Thirdly, health care providers and managers were not comfortable with these interviews being conducted in their facilities – they felt threatened that their provision of care would be criticised. Finally, women's families were reluctant to have "strangers" interview the woman during the "zuo yuezi" period (see section 3.6 for a description of the "zuo yuezi" period), and felt this would harm the mother and baby.

We then attempted to coincide the interviews with a home visit by the village doctor so that we minimise the effects of visiting during the "zuo yuezi". However, this was also not feasible as most women did not receive visits from the village doctors during that period. We then tried to visit women at home in the last 2 weeks of the "zuo yuezi" month as this was thought to be more acceptable to women and families. However, although they consented to the interviews, families were still uncomfortable with these visits. I felt that we were coercing women into having these interviews and consent was not willingly given. I therefore abandoned this method of data collection. As an alternative, the delivery records were assessed, and the semi structured interviews explored practices during childbirth.

- Observations of delivery

I planned to do direct observations of labour and delivery to identify the practices being conducted. This method would have allowed the research team to see for ourselves what kind of care was being provided in the facilities. It would have bridged the gap between what health care providers say and what they actually do (Castle 1991; Pope and Mays 1995). It would have enabled an exploration of the underlying norms and values governing processes and social interaction, such as between health staff themselves, between health staff and women and families, decision-making processes and hierarchies. It would also have provided information about the "quality culture" of the facilities.

However, the managers and health care providers were reluctant to allow us to observe the deliveries. The director of the county health bureau asked each manager and obstetric doctor to contact him when a woman was in labour, so that I and a member of the research team could visit the hospital and ask women's and families' permission to observe. However, we were never contacted, despite many requests from the leader and director of the health bureau, the professor at the university and the research team. I therefore abandoned this method and focused on conducting interviews with women and health care providers and assessing records.

Phase 1

In this phase, I visited Anhui province for three weeks to discuss the study with the research team, develop the tools for data collection, and train the research team in qualitative research methods as well as orientate them to the study. We met with the county health bureau officials and then visited one township to carry out the data collection. Following the data collection, the research team reflected on how this was done and identified any changes needed in the tools and methods. Following preliminary analysis of the data, I modified the qualitative topic guides, added mothers to the range of participants, and designed the next phase of the study.

Phase 2

In phase 2, I visited Anhui province for 2 months. In this period I made three visits to the study site where I carried out visits to 5 facilities collecting the qualitative and quantitative data with the research team. Before the visits I went through the data collection tools, methods for selection of women, ethical issues and data management. During the visit I had daily meetings to discuss the data collection. After each visit, the majority of the recordings were transcribed and translated so that we could review them before the next data collection visit.

After returning to the UK, I finalised the translations so that I could do a preliminary analysis of the data in preparation for the next phase of data collection. This involved reading the translations, identifying emerging themes, identifying gaps in the data and areas for further exploration.

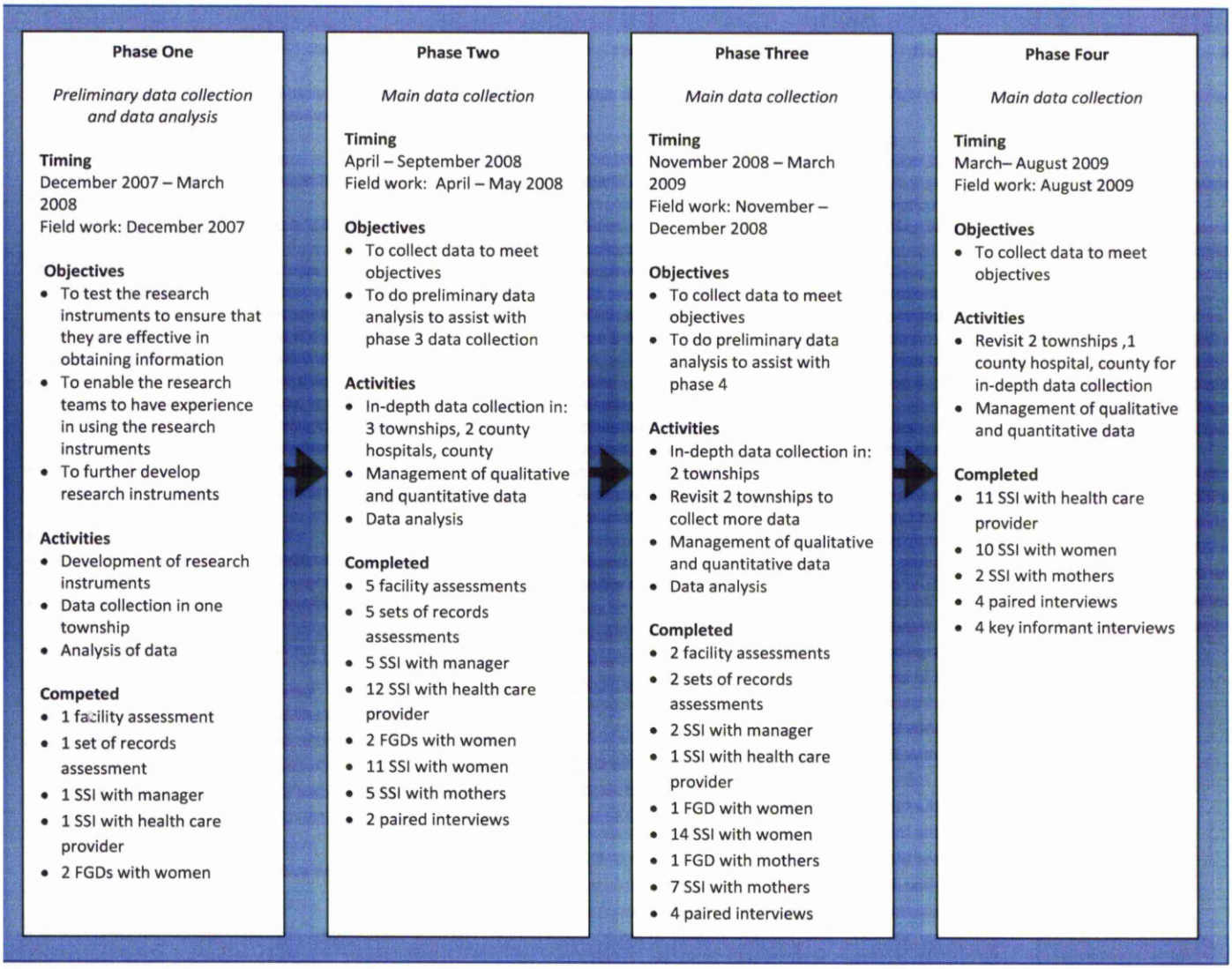
Phase 3

In phase 3, I visited Anhui province for 2 months with three visits to the study site. I visited the remaining two townships, revisited two townships and conducted key informant interviews in the county. A similar pattern of training, transcription and translation and review of transcripts was maintained. After returning to the UK, I finalised all the translations and carried out a full analysis of all qualitative data up to that date. I also analysed the quantitative data.

Phase 4

In phase 4, I visited Anhui province for 6 weeks, with two visits to the study site. The purpose of this visit was to explore themes arising from the data analysis and fill any gaps in the data. This was a very difficult visit in that the county officials were reluctant for the team to collect more data in their facilities. They felt they had already participated in the study, had given enough information in the previous phases of data collection, and did not want to spend any more time discussing the same issues. I had planned to visit both county level hospitals and 4 township hospitals, but I was only able to negotiate data collection in one county level facility and two township hospitals.

Figure 4.4: Phases of data collection



4.5 Management and analysis of data

4.5.1 Qualitative data

Data management

The majority of the qualitative interviews and discussions were taped and transcribed by the research team into Mandarin Chinese. When participants (only 2) did not allow the interviews to be recorded, notes were taken and these were typed as electronic documents. The research team translated most transcripts. These were checked by the senior research assistant for accuracy and completion. In addition, university students studying English translated some of the transcripts. They were given a summary of the study, the topic guides and a list of terms used in the interviews to assist with the translations. They were checked by a University English lecturer. Following these initial checks, the translations were sent to me. I went through the translations very carefully, highlighting areas for clarification. These were then sent back to the senior research assistant who examined the Chinese transcripts and listened to the recordings. This process was repeated several times until the translations were clear. This process was finalised over a period of 3 to 4 months. Careful translation is vital to ensure that meaning is not lost or distorted during this process (Smith et al. 2008). In other collaborative projects, the data has been analysed in the local language, with summaries translated into English (Xu et al. 2006; Hu et al. 2008b). However, in this study I conducted the analysis (with some assistance from the research team) using the translated English transcripts so that I managed the analysis process.

Data analysis

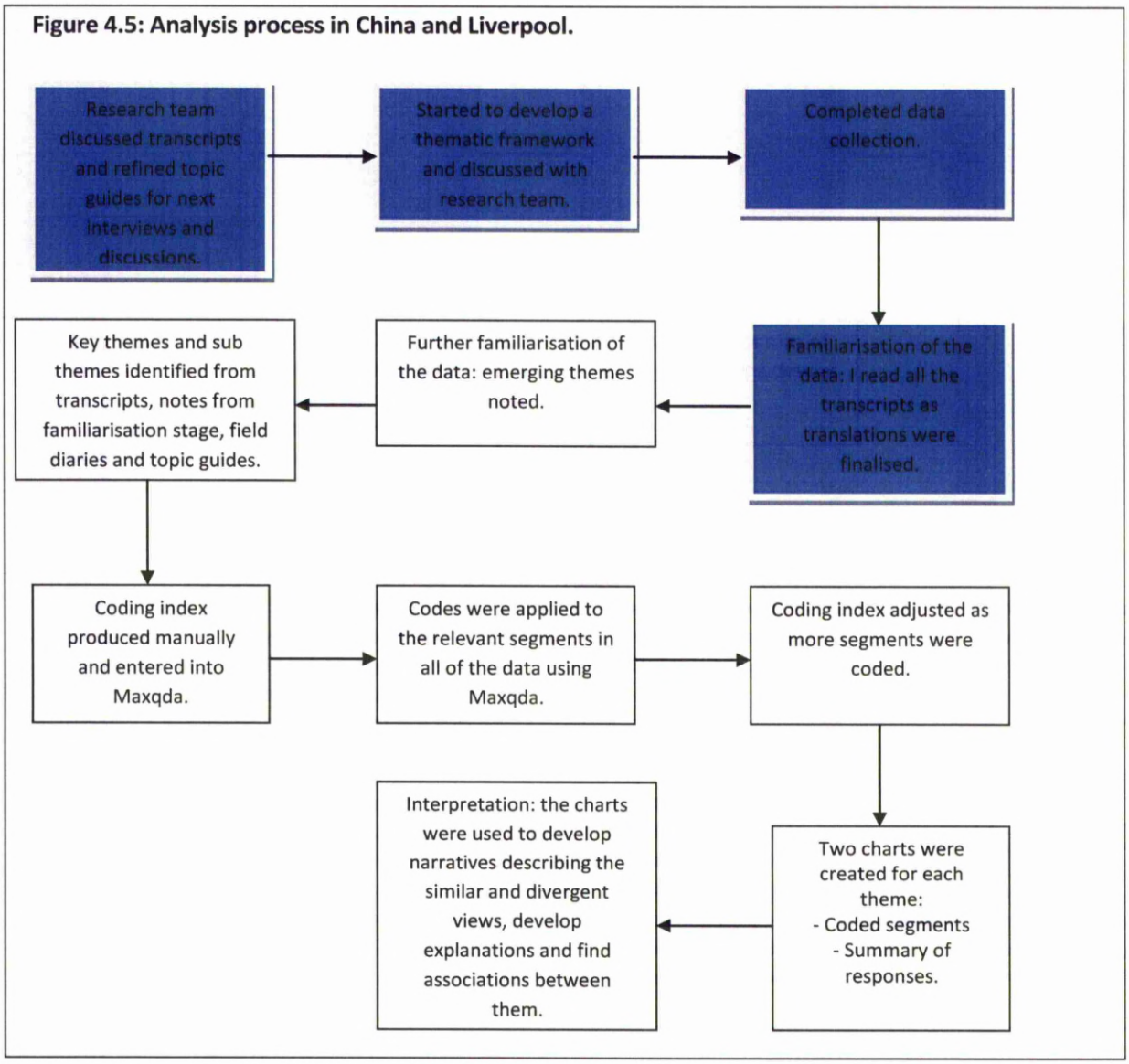
The framework analysis approach was used whereby a thematic framework is used to classify and organise data according to key themes, concepts and emergent categories. It facilitates rigorous and transparent analysis (Ritchie et al. 2003b). Analysis of the data started during the data collection and field work. Following each day of data collection, we discussed the interviews and discussions and read the notes. During the training and preparation for the field visit, we reviewed the preliminary transcripts from the previous visits looking for recurrent themes, gaps in the data and areas to explore. During this time I started to develop the coding index using the transcripts, topic guides, and field notes. I discussed the index with the research team to ensure I was capturing the main themes in the data.

As there was a large volume of data, "MAXqda" the computer programme to assist qualitative data analysis, was used to help organise the data (Marburg, Germany: Verbi Software, 2007). Once the translation process was complete, I finalised the coding index with support from the supervisors. I

entered the transcripts and the index into the computer programme. I then coded the transcripts using the index. I retrieved all the coded segments from all types of respondents for each theme and made a chart, ensuring I was grounded in the data. I then summarised the retrieved segments into a chart. I used the charts to describe the range of responses, highlighted both majority and minority views, and used quotations to illustrate them. I then looked at all the themes and identified linkages and explanations. The senior research assistant read a selection of the charts and narratives to ensure the findings were grounded in the data. The supervisors provided feedback on the narratives.

Figure 4.5 explains the analysis process carried out for this study. The shaded boxes indicate that these stages occurred in China. See appendix 1 for the thematic framework, examples of coded segments and charts.

Figure 4.5: Analysis process in China and Liverpool.



4.5.2 Quantitative data

The data from the records were double entered into SPSS version 15, the statistical package for social sciences (Chicago: SPSS Inc. 2006). The quantitative data was analysed to describe the frequency of types of deliveries, outcomes and practices in the hospitals.

4.6 Quality assurance

4.6.1 Trustworthiness in qualitative research

Trustworthiness criteria is the umbrella term coined by Lincoln and Guba (1985) to refer to a set of criteria for judging the quality or goodness of qualitative enquiry. Lincoln and Guba and subsequently many others have argued that these criteria are more appropriate than the traditional quantitative criteria of validity and reliability. There are four major components that comprise trustworthiness criteria: credibility, transferability, dependability and confirmability (Lincoln and Guba 1985). I employed strategies to enhance the trustworthiness of the study and these are explained under each of the criteria below.

Credibility

To address the credibility of the study, the following key questions were asked: how can we be confident about the 'truth of the findings'? Do the findings of the study make sense? Are they credible to the people we study and to our readers? Do we have an authentic picture of what we are looking at? (Miles and Huberman 1994). There were several strategies that were employed to enhance the credibility.

- The study was conducted over 20 months, with intense periods of field work. This enabled the research team and me to build trust and rapport with each other as well as the local officials, and participants. This helped reduce the "Hawthorne Effect" where participants respond in the way they think the researcher wants (Landsberger 1958; Hammersley 1990). I was able to build up a detailed picture of the context of the study.
- The sample size followed the principle of saturation whereby interviews and discussions continued until no data were generated. (Ritchie et al. 2003a). I was able to ensure "fair dealing", as I captured a wide range of perspectives, meanings and understandings from the participants so that all viewpoints relevant to the study were represented (Mays and Pope 2000).
- Triangulation of sources (women, mothers, health care providers, and key informants), researchers (five assistants, local professor, and supervisors) and methods (SSI, FGD and paired interview)

enabled cross checking of the data. It brought out different points of view that questioned the emerging themes.

- Regular feedback with the research team and during the data collection assisted in the process of uncovering any gaps, bias or errors in the study design, data collection and analysis.
- Regular meetings with supervisors helped me identify gaps, bias and errors, and develop more probing.
- I involved different people in the analysis: during the training the research team looked at transcripts and identified themes; I sought feedback on the draft coding index; shared preliminary narratives from themes; and my supervisors gave feedback on the coding index and narratives.
- During the training and team meetings, the research team discussed the ways that our gender, nationality, professional background and experience influenced the research process and outcomes.

Transferability

Can we apply these findings to other contexts or other groups of people? (DePoy and Gitlin 1994; Schwandt 2001).

- By providing a "thick description" of the researched context, the research methods and the phenomena found, I and others can assess their transferability to another setting (Geertz 1973; Lewis and Ritchie 2003). This is needed not only to display the research process but also to show the conceptual processes by which meaning or interpretation has been attributed or theory developed. Such "transparency" or "thick description" as Lincoln and Guba (1985) advocate, will allow the reader/enquirer to verify for themselves that conclusions reached by the researcher hold validity and to allow others to consider their "transferability" to other settings.

Dependability

Would the findings be repeated if the inquiry were replicated with the same (or similar) subjects in the same or similar context?

- I have tried to write an open and accountable discussion of the methods of data collection and analysis. I have used quotations, and descriptions of the context.
- Triangulation of sources and researchers enabled cross checking of the data.
- Training of the research team helped to ensure the quality of the data.

- A research assistant translated all topic guides and consent sheets from English into Chinese. The senior research assistant then checked them to ensure the accuracy of the information.
- All interviews and discussions were conducted in Chinese in order to avoid problems of interpretation and ensure accurate meaning (Smith et al. 2008).
- The recordings were first transcribed and then translated by the research team. These were checked by the senior research assistant. I then read them carefully and asked for clarifications. The research assistant checked these against the Chinese transcript and recording. This process was repeated several times until the translations were clear.
- I have written a transparent account of the analysis process with examples of the framework, coded segments of text and charts available in the appendices 2, 3 and 4.

Confirmability

How can we be certain that the findings have been determined by the subjects and context of the inquiry, rather than the biases, motivations and perspectives of the investigators?

- I kept a diary to recall impressions, events and reasons for any methodological decisions.
- Triangulation of sources and researchers enabled cross checking of the data.
- There is an open and accountable exposition of methods of data collection and analysis.
- Research team with different backgrounds contributed to the analysis process.
- I have provided an account of my position within the research with a description of my background and how this may have an impact on the methods, findings, analysis and interpretation (Miles and Huberman 1994).

Table 4.10: Summary of activities to enhance trustworthiness of the study

Criteria	Activities to enhance trustworthiness
Credibility	• Intense periods of field work to build trust and rapport with the local officials, and participants. • Reached "saturation point" in data collection. • Triangulation of sources, researchers and methods enabled cross checking of the data. • Regular feedback with the research team. • Regular meetings with supervisors. • Including different people in data analysis process. • Reflexive discussion of characteristics of research team.
Transferability	• Thick description of context, methods and findings.
Dependability	• Triangulation of sources and researchers enabled cross checking of the data. • Training of the research team. • All interviews and discussions were conducted in Chinese. • Careful and transparent translation process.
Confirmability	• Research diary. • Triangulation of sources and researchers enabled cross checking of the data. • Open and accountable exposition of methods of data collection and analysis. • Including different people in data analysis process. • Account of my position in research.

4.6.2 Reflexivity

Reflexivity considers the complexity of knowledge production, the contexts in which the research processes took place and the position of the researcher in research activities (Alvesson and Skoldberg 2000).The relationship between the researcher and the researched is important. Some researchers propose "empathic neutrality", a position that recognises that research cannot be value free but which advocates that researchers should make their assumptions transparent (Snape and Spencer 2003, p13). It is important to reflect upon ways in which bias might creep into our qualitative research practice, and acknowledge our own backgrounds and beliefs, such as gender, ethnic background, profession, and social status influence the choices made within the study, including the research question itself and the methods of data collection (Kuper et al. 2008).

I have been interested in maternal health care in resource poor settings for many years and I am particularly intrigued by the ways that maternal health care services are provided, how women friendly the services are, and how culturally acceptable they are to women. From actually working as a midwife in clinical settings in developing countries, I am fascinated in the provider perspectives of quality of maternal health care and how the system helps or hinders their ability and willingness to provide good quality care.

I was seen as a white, female midwife who trained in the United Kingdom, an outsider, having a western perspective on China and its maternal health care system and services. Informal discussions with the research team highlighted the perception of my being critical of the study county and not fully understanding the unique Chinese context. This reflected the county officials and health care providers fear of being criticised about the maternal health care situation in their county. This may have created a reluctance to give their views of the healthcare system and services being provided. I was seen as a professional midwife with views on how midwifery should be practised. As such I may have inhibited some participants from speaking freely about their clinical practices. I developed a relationship with the research team where I took the role of leading the study design and developing the methods, and at the same time requesting help and insight from the research team. Although it was important to give an air of competence and knowledge, it was equally critical to take on the role of learner so that others felt comfortable to share information.

I was working with a team of researchers and therefore their backgrounds and beliefs also had an impact on the study. The research assistants were all female medical doctors, aged between 24 and 30 years. They were in the Maternal and Child Health Department of Anhui Medical University as postgraduate students and one as a lecturer. This is the most prestigious university in Anhui province and so they were seen as highly educated, from the capital city with perhaps limited

understanding of the study county. They too were seen as critical outsiders and may have created a fear of reporting the actual situation.

It is also important to explain my insider or outsider positionality in this research. I consider myself as an "outsider" to this research. Outsider research refers to when the researcher is an outsider to the commonality shared by participants (Dwyer and Buckle 2009). There are several reasons for my outsider positionality: I do not belong to the community of Chinese women, health care providers or managers in the study population; I do not speak Chinese; and I have not personally experienced delivery care in rural China. Despite this I am a health care provider who has experience of delivery care in resource poor settings.

It is argued that a researcher does not have to be a member of the group being studied to appreciate and represent the experience of the participants (Fay 1996; Dwyer and Buckle 2009). Fay (1996) suggested several reasons for this. First, an outsider can have enough distance from the experience to be able to more adequately conceptualise it. Second, experiences are usually complex with overlapping, confusing, and sometimes contradictory goals, thoughts, and feelings and therefore an outsider may be more able to see through this complexity. Third, others external to the experience might be able to appreciate the wider perspective, with its connections, causal patterns, and influences. With experience of providing delivery care in resource poor settings, reviewing literature on childbirth in China and conducting other research in rural China, I am equipped with some "insider" knowledge.

On the other hand there are advantages to being an insider. The insider research refers to when researchers conduct research with populations of which they are also members (Kanuha 2000) so that the researcher shares an identity, language, and experiential base with the study participants (Asselin 2003). This shared status can be very beneficial as it allows access, entry, and a common ground from which to begin the research. Participants are often more open with researchers so that there may be a greater depth to the data collected (Dwyer and Buckle 2009). However, the dual role of researcher and insider can also result in role confusion when the researcher responds to the participants or analyses the data from a perspective other than that of researcher. It is possible that the researcher's perceptions might be clouded by his or her personal experience and that as a member of the group he or she will have difficulty separating it from that of the participants. This might result in an interview that is shaped and guided by the core aspects of the researcher's experience and not the participant's (Dwyer and Buckle 2009).

4.6.3 Quality assurance in quantitative research

A number of quality assurance measures were taken to improve the quality of the data collected. The tools were developed with input from my supervisors and colleagues. I entered all data from the registers, records and partographs into the database and these entries were checked by the research assistants against the registers and records. Any discrepancies were discussed and corrected where necessary.

4.7 Ethical considerations

The Research Ethics Committee at the Liverpool School of Tropical Medicine in the UK (Approval no. 06.42) and the Biomedicine Ethical Committee in Anhui Medical University (Approval No. 2007002) gave ethical approval for the study. In addition permission to carry out the study was also received from the local county health bureau.

A consent sheet was given to all individuals participating in interviews and group discussions (see appendix 5 for consent sheet). This sheet contained information about the purpose of the study, why the participants have been selected, the procedures, any benefits or harms, confidentiality, the right to refuse or withdraw from the study and contact details of the researchers. The interviewer or facilitator went through the content of the consent sheet with each individual. Verbal consent was sought after the purpose of the research and specific activity for which participation was being solicited was explained.

The names of participants in individual and paired interviews and focus group discussions were not recorded on documents or recordings to further protect privacy and confidentiality.

The majority of interviews and group discussions were recorded following the consent of the individuals participating in the activity. These recordings were kept by the research team and were entered into a computer which was password protected. The password was only known by the research team. Once the recordings were transcribed, the recorded data was deleted from the computer.

In the training sessions given to the research team, much emphasis was placed on the ethical issues surrounding this research, the informed consent process, and maintaining confidentiality.

4.8 Limitations

4.8.1 Case study approach in one county

As our study draws on a single case, any change in institutional setting, context or conditions may produce different outcomes (Miles and Huberman 1994; Yin 2003). By constructing the case of the study county for this study and providing detailed contextual information about the case, the issue of limited generalizability is addressed (Flyvbjerg 2011). This may assist readers in assessing the transferability of our findings to other contexts (Lincoln and Guba 1985).

There is a belief that the case study methodology maintains a bias toward verification, understood as a tendency to confirm the researcher's preconceived notions, so that the study becomes of doubtful scientific value (Flyvbjerg 2011). However, researchers using this methodology, reported that their preconceived views, assumptions and concepts were wrong and that the case material has compelled them to revise their concepts (ibid). By using multiple sources and methods in this study, findings challenged my views and concepts throughout the research process.

4.8.2 Unable to use observation as a method

It would have been an advantage to carry out observations of the facilities and deliveries as part of the study. These observations would have helped to gain an understanding of the culture of the organisation, how the manager and providers put into practice their views on quality and quality improvement. They would also have triangulated with the data from the interviews and discussions as well as the records. However, as described in section 4.4.3, I was unable to conduct this method.

4.8.3 Control over implementation of the study

Carrying out a study in another county raises several issues. Firstly, I had to gain permission to conduct the study. I was very conscious that I was a visitor in the county and that I could be asked to leave at any time. I needed to be tactful and diplomatic in my negotiations.

Secondly, there were "gatekeepers" to all levels within the study: the professor in Anhui Medical University; the research team; the leader and directors in the county health bureau; and the township hospital managers and obstetric doctors. I had to provide accounts of the study to each level in order that I could progress to the next level. Most of these accounts and negotiations needed to be translated. I had to make sure that I was understood as well as understanding what they were saying. It took time to build this sense of understanding and trust.

Thirdly, the county health bureau had their ideas about how the study should be conducted. They wanted the study to be completed as quickly as possible to limit the disruption to their work as well as the work of the hospital staff. Therefore we could not spend more than two days in each facility. We were encouraged to finish everything in these two days. This resulted in a large number of interviews and discussions being conducted in a short period of time. The speed of field work raised several issues: this was very tiring for the research assistants; there was not enough time to reflect on how the interviews and discussions went; and in some cases a lack of probing because of limited time for each activity. To try to counter these limitations, I negotiated carrying out the study in several phases so that data could be analysed and any gaps identified and problems solved. In addition during each field visit only one or two facilities were included, preventing exhaustion of the research assistants and allowing for review of transcripts between field visits.

4.8.4 Skills of the research team

The research team were experienced in conducting studies using quantitative research methods, but were unaccustomed to conducting qualitative research. In addition, women and mothers were also not used to being asked questions about their views and experiences of childbirth. Therefore encouraging women and mothers to divulge information was very difficult for the research assistants. They also found interviews much easier to conduct than the focus group discussions. As the confidence and the abilities of the research team increased, the quality of interviews and discussions improved. Training was conducted before each field visit to help promote the skills of qualitative research.

4.8.5 Language and translation

Not being able to speak Chinese was a major drawback in all aspects of the study. The research assistants conducted all interviews and discussions in Chinese. As the study progressed the quality of the interviews improved. However, some issues, which the principal researcher would have probed further, were left untouched. Although many efforts were made to ensure the quality of the translation and transcription, it is inevitable that some data and meaning were lost.

4.8.6 Recall of events

The use of retrospective interviews and discussions may suffer from recall bias. To minimize this effect, we interviewed multiple stakeholders, triangulated between different data sources including facility records and used multiple methods and investigators to interpret the data (Miles and Huberman 1994; Yin 2003). This also helped us improve the confirmability and credibility of the study (Lincoln and Guba 1985; Devers 1999).

4.8.7 Location of some interviews and discussions with women and mothers

Early in the study, some interviews and focus group discussions with women and mothers were conducted in the township hospital meeting rooms and offices. These were sometimes interrupted by the manager and other staff opening the door to see who had come for the study. This was not my choice of venue but rather the choice of the research team, local officials and township hospital manager. I think that there were several reasons for their decision: it was easier to organise the discussions in the hospitals; they felt that having the interviews and discussions in the hospitals provides an authority to the study and so women will feel more confidence in the study; the hospital and local officials could observe all the activities and keep control of what was happening. The location may have inhibited the respondents from speaking openly about their views and experiences of delivery care and particularly for women who delivered in those township hospitals.

The issues of location and privacy were discussed with the research team. Privacy may not be such an issue to Chinese people as it would be in other cultural settings, but it is still probable that it can limit or bias the data obtained. After much discussion, I was able to persuade the research team and officials to use local restaurants to conduct FGDs and some interviews, and homes for most of the interviews with women and mothers. Women and mothers appeared more comfortable in these environments and the data appeared to be more in depth.

4.8.8 Consent

There were several issues about consent to participate in the study. Firstly, they revolve around the perceptions of the research team and local officials about the nature of giving consent in China. It was clear from discussions with the research team and local officials, that gaining consent from the local health bureau and township hospital is sufficient and that individual consent from participants is not necessary. They felt that women, mothers, health care providers and managers do not expect to be asked for consent to participate in the study. By agreeing to come to the interview or discussion, they are consenting to participate in the study and going through the consent process is unnecessary and potentially harmful. The consent sheet makes the event serious and participants were then suspicious of the study. They perceived that some participants refused to be part of the study after reading the section about withdrawal from the study.

Secondly, the research assistants were not used to asking people for consent to participate in the study. They felt uncomfortable going through the process and were reluctant to use the consent sheet. They were very uneasy about the wording of the consent sheet which allows people to withdraw from the study. They wanted me to remove this part of the consent sheet. I spent a lot of

time discussing the consent sheet and the ethical issues associated with doing this study during the training and the field work. I made sure that I was with each research assistant for some interviews and discussions during each visit so that I could observe the consent process.

Thirdly, there was an issue of local officials being involved in the recruitment and consent processes during some interviews and discussions. It also seems that if officials ask community members to participate they will agree for fear of reprisal or compromised treatment. We tried to minimise officials' involvement in the recruitment and consent processes, by asking them to leave the room during this time.

There is a global debate about voluntary informed consent of individuals. The relevance and priority given to the notion of individual consent have been challenged (Christakis and Rox 1992). Practical difficulties in the informed consent process can be exacerbated in resource poor settings by low levels of formal education and different values, priorities and understanding of health and illness. There are concerns about the physical act of signing consent forms, especially when individuals are unable to read.

Studies in Senegal, the Gambia, India and Kenya found support for principles of autonomous informed consent, particularly when preceded by community level information dissemination (Preziosi et al. 1997; Leach et al. 1999; DeCosta et al. 2004; Molyneux et al. 2005). Molyneux et al. (2005) also found widespread agreement amongst community members that chiefs and elders can give permission for research to be carried out in an area but cannot decide for specific households or individuals.

Individual informed consent in the context of Chinese culture is a complicated issue. The western notion of respect for the person as an autonomous individual supporting the argument for informed consent, may not hold such value in Chinese society (Olsen et al. 2010). Social roles in China are chiefly defined by familial relations where people exist through and are defined by their hierarchical relationships with others. Medical decisions may not be considered simply from an individual's perspective but as embedded in a web of familial relationships with far-reaching effects (ibid). However, the Government of China recognises that informed consent for research is ethically required (Ministry of Health China 2007c).

There have been several studies about the informed consent process in medical / health research in China, but to my knowledge none on community perceptions. A study assessing the current practice of informed consent in medical research in public hospitals in Shanghai found there were several defects in the process (Jianping et al. 2010). Some consent forms had no information on: the social

benefits of the research; risks to embryos; alternative treatment; and details of the ethics committees. This may be as a result of the principle investigators and ethics committee members not fully understanding the informed consent process; and also the conflict of interests of the investigators and the hospitals. As part of the study, students who were participants of the medical research were surveyed, with 38% reporting less than 1 day to provide informed consent (ibid).

In a review of informed consent process in Chinese trials on the treatment of cancer pain, 32.6% reported approval by an ethics committee, while only 37.0% stated that the participants provided consent. The authors concluded that the reporting of ethical issues and informed consent may be inadequate in Chinese RCTs in this field (Lu et al. 2011).

4.9 Conclusion

Summary of methodology

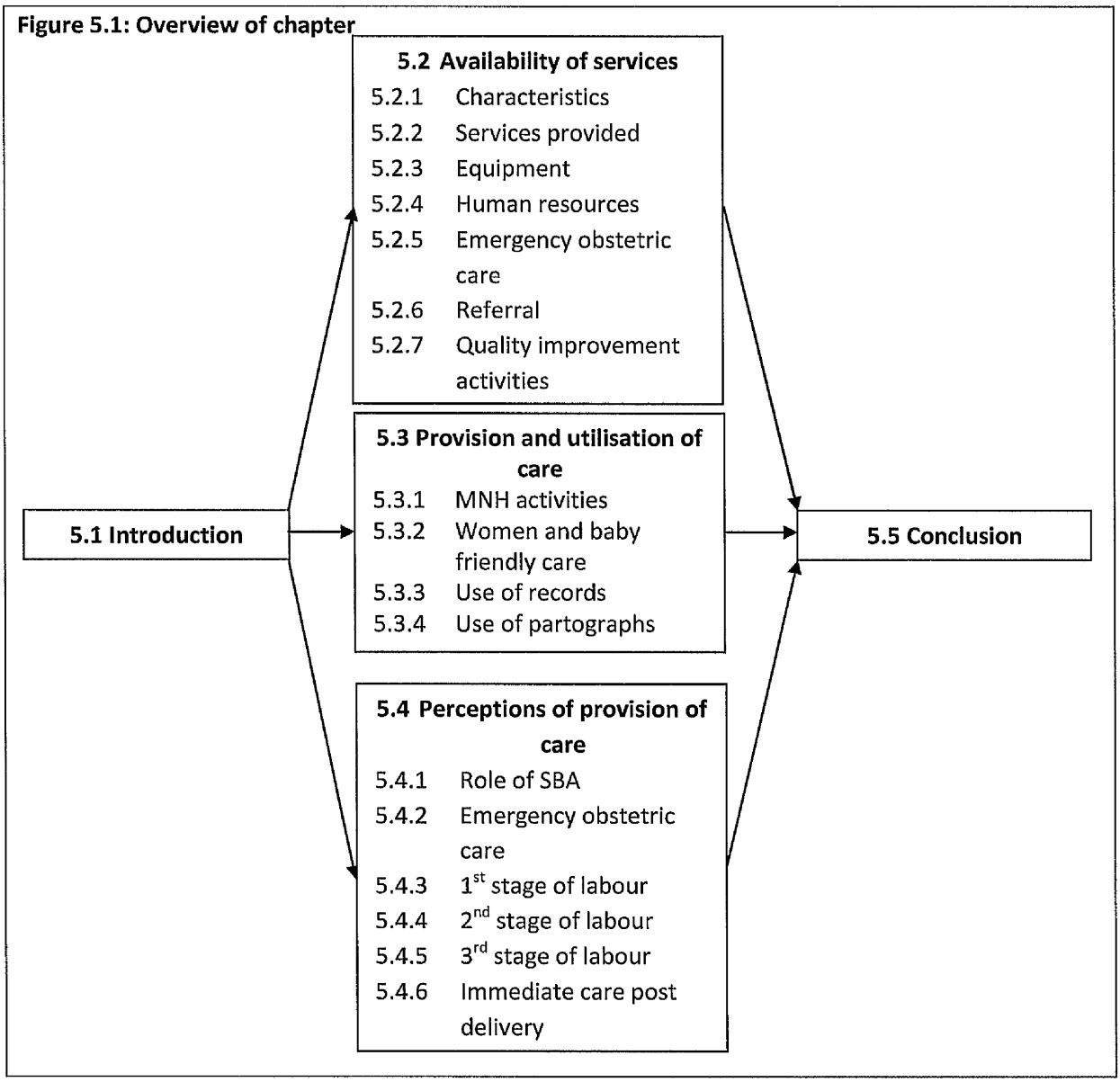
- Mixed methods were used to collect data to explore quality of care in the study county.
- The study sites were two county level and six township level facilities.
- There were four phases for data collection over a period of 20 months to ensure intense engagement.
- Training of the research team throughout data collection to help assure the quality of the data.
- For the quantitative research: 8 facility assessments, 1414 register assessments, 111 record and partograph assessments.
- For the qualitative research: 5 FGDs and 35 interviews with women, 1 FGD and 14 interviews with mothers, 10 paired interviews with women and mothers, 25 interviews with health care providers, 8 interviews with managers and 6 key informant interviews.
- Ethical approval was obtained from the Liverpool School of Tropical Medicine Research and the Ethics Committee Biomedicine Ethical Committee in Anhui Medical University; and informed consent was obtained from all participants.
- Qualitative data was analysed using the framework approach.
- Quantitative data was analysed descriptively.
- Limitations include: limited control over the conduct of the study; multiple "gatekeepers" in accessing study site and population; difficulties with informed consent; location of some interviews and FGDs were not ideal; not being able to speak Chinese was a major drawback; skills of research team in qualitative research improved as the study progressed; and my position as a white, female midwife from the UK can affect the way the study was designed and conducted as well as the data generated.

Chapter 5: Provision of Care

5.1 Introduction

The focus of this chapter is a description of the provision of delivery care in the study facilities. I will firstly describe the availability of services with regard to facility characteristics, services provided, equipment, human resources, EmOC, referral system and quality improvement activities. The second section describes the provision and utilisation of services through review of case notes, registers and partographs. I will then go on to describe the provision of care during labour and delivery from the perspective of health care providers, managers and key informants. Figure 5.1 gives an overview of the chapter.

Figure 5.1: Overview of chapter



5.2 Availability of care

5.2.1 Characteristics

Amongst the eight facilities selected for this study, there are two county level hospitals: the County Hospital and Traditional Chinese Medicine Hospital (TCM). The County Hospital is the referral centre for the whole county. The remaining facilities are six township level hospitals. Table 5.1 shows characteristics of the study hospitals.

Table 5.1: Characteristics of study hospitals

	County	TCM	A	B	C	D	E	F
Type of hospital	County level	County level	Township	Township	Township	Township	Township	Township
Population of catchment area	310,000	310,000	48,000	17,650	45,000	25,000	30,000	17,000
Distance to nearest referral hospital	40 km	40 km	23 km	23 km	18 km	12 km	30 km	20 km

5.2.2 Services provided

All hospitals provide antenatal care on a daily basis (table 5.2). They are able to carry out haemoglobin checks and urine examinations. Delivery care services are provided by all hospitals for 24 hours every day, with the exception of D hospital, where on Sundays, it is only provided if there is an arrangement with the doctor. The two county hospitals have two delivery beds each, whereas each township hospital only has one delivery bed. All hospitals provide postnatal care services within the first 48 hours following delivery. However, only three township hospitals carry out domiciliary postnatal visits. The majority of the hospitals do postnatal examinations after six weeks at the hospitals. Each hospital has a pharmacy available 24 hours every day.

Table 5.2: Services provided

Services provided		County	TCM	A	B	C	D	E	F
Antenatal	Daily ANC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No. of ANC beds	15	30	2	2	4	2	1	4
	Haemoglobin check	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Urine investigations	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Delivery	No. of hours per day / days per week	24 hrs / 7 days	24 hrs / 7 days	24 hrs / 7 days	24 hrs / 7 days	24 hrs / 7 days	12hrs / 6 days	24 hrs / 7 days	24 hrs / 7 days
	No. of delivery beds	2	2	1	1	1	1	1	1
Postnatal	Within 48 hours	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Within 2 weeks	No	No	Yes	Yes	Yes	No	No	No
	After 6 weeks	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

5.2.3 Equipment

In the facility assessments, all hospitals had parenteral antibiotics, oxytocic drugs and anti-convulsant drugs (magnesium sulphate) and vacuum extraction sets (table 5.3). Only three hospitals including the two county level hospitals have elbow length gloves for manual removal of the placenta. Six out of eight hospitals have equipment for the removal of retained products of conception. Only three hospitals, including the county level hospitals had neonatal ambu bags. Five hospitals, including the county level hospitals, have functioning operating theatres. All hospitals, apart from D township hospital have CS sets. With regard to blood transfusion equipment, all hospitals have reagents for blood grouping, however only the County Hospital has equipment to take and store blood for transfusion and a blood bank. In addition there are no refrigerators for oxytocin storage in any of the facilities; ergometrine is not available in any of the facilities; and syringes and needles were readily available in all facilities.

Table 5.3: Availability of equipment, drugs and supplies

	County	TCM	A	B	C	D	E	F
Parenteral antibiotics	yes	yes	yes	yes	yes	yes	yes	yes
Uterotonic drugs	yes	yes	yes	yes	yes	yes	yes	yes
Magnesium sulphate	yes	yes	yes	yes	yes	yes	yes	yes
Diazepam	yes	yes	yes	yes	yes	yes	x	x
Elbow length gloves	yes	yes	yes	x	x	x	x	x
MVA / D&C set	yes	yes	yes	yes	yes	yes	x	x
Vacuum extraction	yes	yes	yes	yes	yes	yes	yes	yes
Neonatal ambu bag	yes	yes	yes	x	x	x	x	x
Functional operating theatre	yes	yes	yes	x	yes	x	x	yes
Complete CS set	4	3	2	2	3	0	2	2
Reagents for blood	yes	yes	yes	yes	yes	yes	yes	yes
Blood bags and sets	yes	x	x	x	x	x	x	x
Refrigerator for blood	yes	x	yes	x	x	x	x	x
Blood stock in blood bank	yes	x	x	x	x	x	x	x

5.2.4 Human resources and skilled birth attendants

In the facility assessments, data were collected about human resources and training. There is a range of numbers and types of staff working in maternal and newborn healthcare (table 5.4). Skilled birth attendants were identified as midwives, obstetricians, doctors and assistant doctors. There are midwives in the County hospital, TCM hospital, A, C, E and F township hospitals. The County Hospital has the largest number at 7, followed by A township hospital. They work on the labour ward and assist with NVDs. There are nurses in all hospitals apart from A township hospital where there are 4 midwives. The number of nurses ranges from 11 in the TCM hospital to 3 in E township hospital.

They work on wards where antenatal and postnatal women are admitted. They may also assist with NVDs and CS.

In all hospitals there are obstetricians, and their numbers range from 7 in the County Hospital to 1 in B, D and E township hospitals. They are able to conduct CS. In some township hospitals there are general doctors and assistant doctors working in maternal and newborn health. In F township hospital there is also a surgeon who conducts CS. There are staff with anaesthetic skills in all hospitals apart from E township hospital. The numbers vary from 4 in the County Hospital to 1 in A, B and D township hospitals. There are MCH workers in 5 of the 6 township hospitals, with no MCH workers working in the County and TCM hospitals.

Pharmacists, laboratory technicians and ultrasonographers are available in all facilities. They work throughout the hospitals and not solely in maternal and newborn healthcare. There are greater numbers of these cadres of staff in the County and TCM hospitals and A township hospital.

Table 5.4: Numbers and types of staff working in maternal and neonatal healthcare

	County	TCM	A	B	C	D	E	F	Total
Nurses	8	11	0	4	4	6	3	8	**44**
Midwives	7	1	4	0	1	0	1	1	**15**
Assistant doctors	0	0	0	1	1	0	0	2	**4**
Doctors	0	0	0	1	0	0	0	0	**1**
Obstetricians	7	4	5	1	2	1	1	2	**23**
Staff with anaesthetic skills	4	3	1	1	2	1	0	3	**15**
Paediatricians	7	6	1	4	2	1	1	0	**22**
Surgeons who do CS	0	0	0	0	0	0	0	1	**1**
MCH workers	0	0	3	3	2	1	1	0	**10**
Pharmacists	11	14	7	2	4	4	3	4	**49**
Laboratory technicians	9	9	4	1	2	1	1	2	**29**
Ultrasonographers	4	5	2	1	2	1	2	2	**19**
Total	**57**	**53**	**27**	**19**	**22**	**16**	**13**	**25**	**232**

Training

Numerous trainings have taken place from May 2006 to December 2008, with a total of 170 staff being trained on various topics displayed in table 5.5. Staff in all hospitals apart from the County Hospital received training on newborn care. Emergency obstetric care training was provided to staff in all hospitals with the exception of B and E township hospitals. Baby friendly initiative training was given to staff in the County Hospital, A, B, C and E township hospitals. Only staff from two hospitals received training on maternal death reviews: C and E. Staff from 5 of the 6 township hospitals received training on maternal healthcare policies.

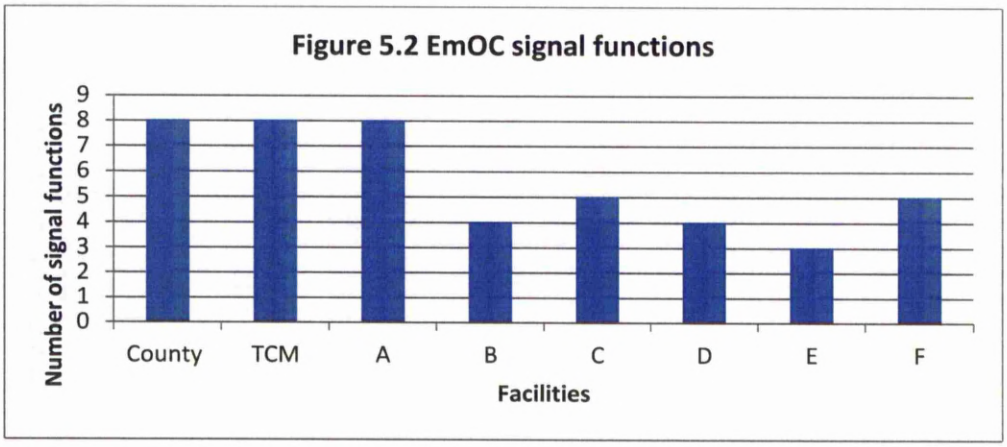
Table 5.5: Number of people who received training in the last 2 years

	County	TCM	A	B	C	D	E	F
Infection control	0	5	8	0	3	0	0	2
Emergency obstetric care	14	5	4	0	3	1	0	1
Post abortion care, including MVA	5	0	2	0	3	0	1	0
Focused antenatal care	0	5	8	2	3	0	1	0
Maternal death reviews	0	0	0	0	1	0	1	0
Family planning provider training	7	0	0	0	0	0	0	0
Prevention of mother to child transmission	0	0	3	0	3	0	2	0
Newborn care	0	5	4	2	3	1	1	1
Voluntary counselling and testing	0	0	0	0	5	0	0	1
Baby friendly initiative training	14	0	8	2	3	0	2	0
Maternal health care policies and laws	0	0	8	2	3	1	2	0
Other training relevant to MNH	0	0	0	1**	8*	0	0	0
Total	**40**	**20**	**45**	**9**	**38**	**3**	**10**	**5**

* 5 staff had training on computer skills for use of maternity card and 3 had training on data collection and analysis. ** CS training

5.2.5 Emergency obstetric care

In each facility, the signal functions of emergency obstetric care (EmOC) that have been provided in the 3 months prior to the visit were recorded (figure 5.2). None of the facilities performs all the functions of a CEmOC. The County hospital performs 8 of the functions but does not carry out assisted delivery such as vacuum or forceps deliveries. The TCM hospital and A township hospital also perform 8 of the functions, but are unable to provide blood transfusion. Of the remaining 5 township hospitals, none perform the 7 signal functions of a BEmOC facility. They do not carry out manual removal of placenta, assisted delivery, basic neonatal resuscitation and blood transfusion. Interestingly, 5 of the 8 facilities do provide CS services, whilst only one hospital can give blood transfusions.



Women who need blood are either transferred or blood is obtained from Wuhu city blood transfusion centre. This centre provides blood for 3 counties and 4 districts, with an approximate

population of 2 - 3 million. The centre can store a limited amount. If there is a shortage of blood, the government will gather people together to take blood. Hospitals are not permitted to take blood from family members and give to the patient. If a hospital wishes to provide blood transfusions, the hospital must apply to the health bureau for a license.

5.2.6 Referral system

In the facility assessments, all facilities have functional telephone lines. In the county level hospitals and some of the larger township hospitals, there are telephones outside the delivery rooms. However, in the smaller township hospitals, the telephones are situated in the antenatal clinic or the manager's office. There are no mobile telephones belonging to the health facility. However, all doctors and midwives have their personal mobile telephones which they use for work purposes. The mobile phone network is excellent throughout the county.

Four hospitals have car ambulances: the County Hospital has 3 ambulances; TCM hospital has 2 ambulances; and townships E and F both have one ambulance each. The other hospitals rely on the County Hospital to send one of their ambulances to pick up a patient from their hospitals. There are no communication facilities within the ambulances. However, a member of staff usually accompanies a woman to the referral hospital and they will carry a mobile telephone. There are no motorcycle and bicycle ambulances in any of the facilities. There are no referral forms available in any of the facilities.

5.2.7 Quality improvement activities

There were no treatment protocols available in any of the facilities. No quality improvement activities such as facility or community based maternal death audit, perinatal death audit, and standards based audit were reported to be carried out in any of the facilities. There were no quality improvement committees in the facilities.

5.3 Provision and utilisation of care

5.3.1 MNH activities

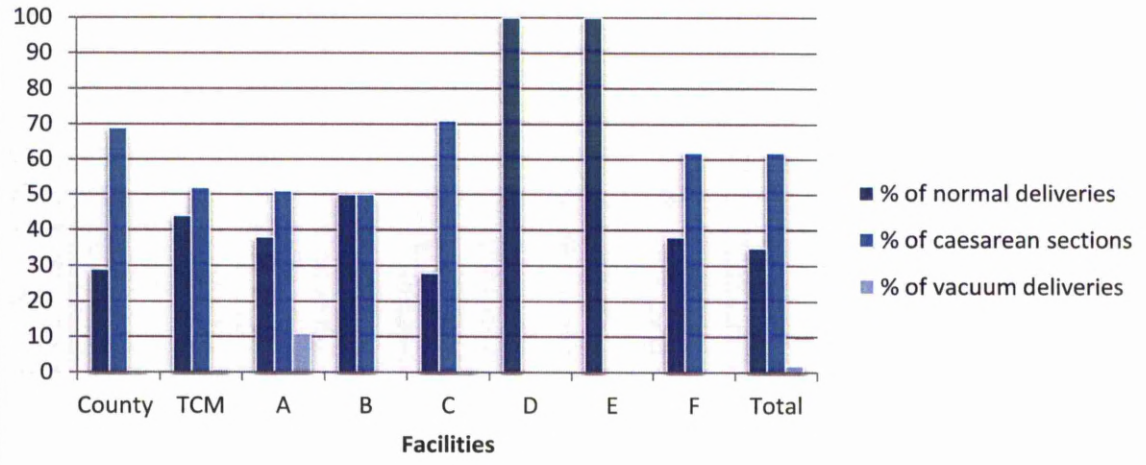
The delivery register was assessed for the previous year in each facility. There were a total of 1414 deliveries in the 8 facilities, with a range of 4 to 618 deliveries (Table 5.6). The hospital NVD rate and CS rate were 35% and 62% respectively (Figure 5.3). Vacuum deliveries accounted for only 2% of deliveries. There were no forceps deliveries recorded. In the two county level facilities (County Hospital and TCM hospital), the hospital CS rates were 69% and 52%. However, the CS rates were also above 50% in 4 of the township hospitals, with one hospital, township C, having a rate of 71%.

The stillbirth rate was very low with 0.7 stillbirths occurring per 1000 births. There were a total of 11 twin deliveries, with the majority occurring at the county level facilities.

Table 5.6: Numbers of deliveries and types in the past year

	County	TCM	A	B	C	D	E	F	Total
Total no. of deliveries	618	385	137	4	148	4	4	114	**1414**
No. of NVD	180	171	52	2	42	4	4	43	**498**
No. of CS	428	199	70	2	105	0	0	71	**875**
No. of vacuum deliveries	4	3	15	0	1	0	0	0	**23**
No. of live births	616	349	137	4	150	4	4	114	**1378**
No. of stillbirths	1	0	0	0	0	0	0	0	**1**
No. of twins	6	3	0	0	2	0	0	0	**11**

Figure 5.3 Delivery types and outcomes



5.3.2 Women and baby friendly care

When facilities were assessed about women and baby friendly care, there were a range of responses (table 5.7). All facilities provided some aspects of women friendly care: door to delivery room and bed sheet available on delivery bed to provide privacy; companion is allowed with women during labour; women can take food during labour; and women can move around during labour. No facilities provided the following aspects of care: curtains or screens around delivery beds – there is no privacy for women in the county and TCM hospitals where there are two delivery beds in the delivery room; and women cannot adopt any position for delivery. Pubic shaving and enema are not

routinely done in any of the facilities. In seven facilities, routine episiotomies were not given, but it was a routine practice in the TCM hospital. Women are allowed to have a companion for delivery in 5 of the 6 township hospitals. This practice is not permitted in the County and TCM hospitals and township hospital D. All facilities routinely dried and wrapped babies immediately after delivery to prevent hypothermia. However, only 4 hospitals encouraged women to breastfeed the baby within 1 hour of delivery.

Table 5.7: Women and baby friendly care

Aspects of care		Facilities							
		County	TCM	A	B	C	D	E	F
Women friendly	Curtains or screens around delivery beds	x	x	x	x	x	x	x	x
	Door to delivery room	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Bed sheet available on delivery bed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Companion allowed with women during labour	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Companion allowed with women during delivery	x	x	Yes	Yes	Yes	x	Yes	Yes
	Allowed to take food during labour	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Allowed to move around during labour	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Any position allowed for delivery	x	x	x	x	x	x	x	x
	Routine episiotomy	x	Yes	x	x	x	x	x	x
	Routine pubic shaving	x	x	x	x	x	x	x	x
	Routine enema	x	x	x	x	x	x	x	x
Baby friendly	Newborn dried and wrapped immediately after birth	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Newborn put on breast immediately after birth	x	x	Yes	x	Yes	x	Yes	Yes

5.3.3 Use of records

A total of 111 delivery notes were assessed, which accounted for 22% of the number of vaginal deliveries in the facilities in the past 12 months. See table 5.8 for a breakdown of records assessed per facility. Section 4.4.2 describes the methods of selecting the delivery notes.

Table 5.8: Number of sets of notes assessed per facility

	County	TCM	A	B	C	D	E	F	Total
Number of records assessed	35	33	15	2	10	2	3	11	**111**
Number of records as % of number of vaginal deliveries	19	19	29	100	24	50	75	26	**22**

The notes were pre-made forms with tick-boxes, boxes to be completed and sections where notes could be written. In all the notes age, parity, sex of baby, outcome of delivery and signature of health worker conducting delivery were recorded (table 5.9). There was a large difference in sex

ratio at birth with 67% of babies being male and 33% being female. There were no stillbirths in the 111 cases reviewed.

In most notes delivery date, name of woman, type of delivery, birth weight, blood loss and maternal observations were recorded. However, several criteria were not recorded in any of the notes, including: use of pubic shaving; use of enema; giving oral fluids; presence of companion during labour and delivery; position for delivery; mobilisation in labour; and giving pain relief. This may mean that either these aspects of care are not usually recorded or were not carried out.

In 53% of the notes of the 111 deliveries reviewed, episiotomies were recorded as given. 71% of notes recorded giving oral or intravenous antibiotics. 41% of notes recorded intravenous fluids being given with 20% of notes recording intravenous oxytocin being given for augmentation of labour. Use of oxytocin in the third stage of labour was recorded in 84% of the notes. In many records it was not always clear if rectal or vaginal examinations were done. In this situation, I did not count these examinations. However, where it was clear, 85% of notes recorded more than one vaginal examination and 39% of notes recorded more than 1 rectal examination. The mean number of hours stayed in hospital following vaginal delivery was 69 (almost 3 days), with a range of 25 (1 day) to 131 hours (5 ½ days).

Table 5.9: Indicators recorded in delivery notes

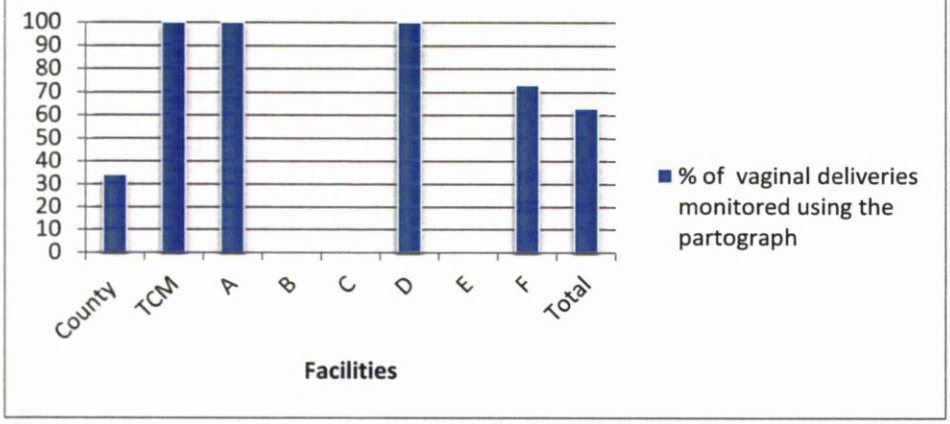
Indicator recorded	%	Indicator recorded	%
Delivery date	96	Blood loss	98
Name of woman	98	Signature	100
Age of woman	Mean: 26.12 yrs Range: 20-36 yrs	Maternal observations after delivery	96
Parity	1st baby: 67	Episiotomy	53
	2nd baby: 31	Oxytocin for augmentation	20
	3rd baby: 2	Intravenous fluids	41
Type of delivery	99	Use of oxytocin for 3rd stage of labour	84
Type of delivery	NVD: 93	Antibiotics	71
	Vacuum: 6	Number of vaginal examinations	0 VE: 15
	Not recorded: 1		1 VE: 77
Sex of baby	Male: 67		≥2 VE: 8
	Female: 33	Number of rectal examinations	0 RE: 61
Outcome of baby	Live birth: 100		1 RE: 27
	Stillbirth: 0		≥2 RE: 12
Birth weight	99	Discharge number of hours after delivery	Mean: 69 Range: 25 - 131

5.3.4 Use of partographs

For the selected 111 records of vaginal deliveries, use of partograph was assessed. Each partograph was assessed against a set of 17 criteria. Sections 4.3.3 and 4.4.2 describe the selection of delivery notes and partographs and the criteria used to assess them.

In 63% of the records, partographs were used. However, in the individual facilities the use of partograph ranged from 100% of delivery cases in TCM, A and D hospitals, to 0% in B, C and E hospitals (Figure 5.4). The remaining two hospitals, County Hospital and F hospital, the use of partograph was 34% and 73% respectively.

Figure 5.4: Vaginal deliveries monitored with partograph

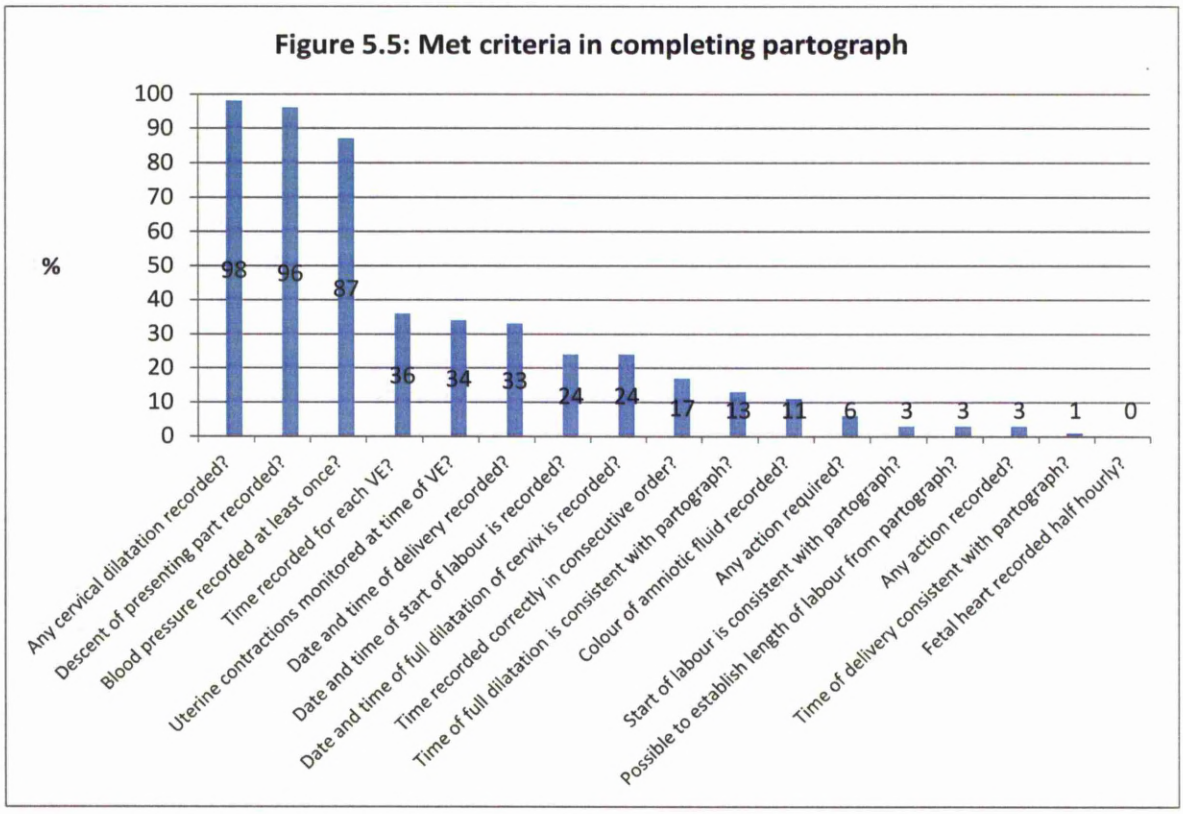


When the partographs were assessed against the 17 criteria, no partographs recorded information according to all the criteria. The mean number of criteria met per partograph was 5 (351/70), with a range of 2 to 11 criteria being met (table 5.10).

Table 5.10: Frequency of number of criteria met in completing partograph

Number of criteria met	2	3	4	5	6	7	8	9	10	11
Number of partographs	7	15	11	10	10	7	5	2	2	1
% of partographs	10	21	16	14	14	10	7	3	3	2

Most partographs recorded cervical dilatation, descent of presenting part and at least one blood pressure: 98%, 96% and 87% of partographs respectively (Figure 5.5). However few partographs met any of the remaining criteria. Assessment of progress of labour was poorly recorded. It was only possible to establish the length of labour in two of the partographs (3%), indicating no or inconsistent recordings of time. Contractions were recorded in only 34% of cases. Assessment of the foetal condition was also poorly recorded. Half hourly auscultations of the foetal heart were not recorded in any of the partographs. Some partographs showed no foetal heart recordings, whilst others showed irregular recordings. The colour of amniotic fluid was only recorded in 11% of the partographs. The mean number of vaginal / rectal examinations recorded was 4 with a range between 0 and 8 examinations. It was impossible to assess if these were vaginal or rectal examinations. Most partographs recorded 3, 4 or 5 examinations.



5.4 Perceptions of provision of care

5.4.1 Perceptions of role of skilled birth attendant

The key informants reported that a skilled birth attendant means a trained health worker, such as doctors and midwives, with theoretical knowledge and clinical experience who can assist with delivery. Skilled birth attendants should be able to provide antenatal care, identify high-risk pregnancy, refer when necessary, understand and observe the birth process, conduct deliveries, manage labour and postpartum complications and provide postnatal and newborn care.

Most health care providers and key informants thought that the role of doctors has changed over the last decade. Women's and families' demands are greater and it is necessary to take these into consideration and to interact more with women and families. It is important to assess the health of the mother and baby carefully when they enter the hospital, as families are more likely to start medical disputes with the hospitals. As a result of the high CS rate, doctors do not need the complete range of skills of midwifery. They need to be able to do CS and deal with complications in surgery. Many doctors and midwives do not have the skills to monitor labour, conduct NVDs and deal with complications.

"The staff, both midwives and doctors in county hospitals, township health hospitals, as well as family planning service stations should be skilled birth attendants. But I think it is impossible for majority to achieve. They should have skills of antenatal care, identification of high-risk pregnancy, and referral. Observation of labour and childbirth and after childbirth dealing with newborns is very important. But a lot of them I come into contact do not have these skills, they do not even observe the birth process." KII3, F, 35years.

Most health care providers, managers and key informants thought the midwife's role has reduced over the last decade. There are fewer midwives now and they have less of a role in childbirth because of the high CS rate (midwives are not permitted to perform CS). As a result, women choose a doctor rather than a midwife to do the deliveries. Midwives said that they used to conduct NVDs independently. The doctor in the TCM hospital also explained that midwives in the past were trained to provide health education to pregnant women, but this is not done nowadays.

"Midwifery part of the medical staff is now very thin, because of the relatively high caesarean section, the average caesarean section rate is 60% or more, and some units can reach 80%. So skills to assist normal labour and delivery are diminishing. Because the majority of pregnant women require caesarean section, doctors do not need to handle the midwifery skills." KII2, M, 57years.

5.4.2 Perceptions of emergency obstetric care

From the interviews with providers, managers and policy makers, perceptions of EmOC, the concept of high risk women and CS were explored. There was little understanding about the concept of EmOC. The director of the MCH station had heard of EmOC from reading journals but was unable to define it. He said that this concept is not used in rural China. The director of MCH in the health bureau and the director of the training institute had not heard of the concept of EmOC. The doctor from the provincial hospital had heard of EmOC but said she did not understand it well. Her view was that township hospitals should know how to deal with high risk women.

"It (emergency obstetric care) has been proposed in recent years, and was not carried out in practice. I read in a magazine. It needs a long time to understand. County-level hospitals think their duty is to assist NVD smoothly and to complete caesarean section; without high standards. Emergency Obstetric Care is not suitable for rural areas now, and there is inadequate staff to do so." KII2 M, 57 years.

Concept of high risk women

All health care providers and key informants said that women having one or more risk factors can be classified as high risk. This was learned from textbooks and training and there are documents from the health bureau and MCH station detailing the list of high risk factors. These can also be found in the women's health care handbook. The stated risk factors include: age younger than 18 years; age older than 35 years; overweight; anaemia; previous uterine surgery; hypertension; and heart disease.

The director of the MCH station director also said that there are national screening standards. The director of the health bureau classified high risk into two areas: women with underlying diseases during pregnancy; and women who develop diseases because of the pregnancy. Health care providers said that they screen women for risk factors in the antenatal period through history taking, examination and investigations. Each risk factor has a score of 5 points. If a woman has at least 5 points, then she is high risk. There is a special register for high risk women in each hospital which is monitored by the county MCH station and health bureau every year. Some health care providers said that they can manage high risk women. The doctor from the TCM hospital said that how they manage high risk cases depends on the facilities, equipment and services available. For example, women with a relatively short height are considered as high-risk women, but this can be resolved by CS. Women with placenta praevia or a very small baby will be referred to higher level hospitals.

The director of the MCH station director explained the scoring system more fully. When a woman has a score of 5 points, this means that she is high risk and a plan of action must be made. When she has a score of 5 to 10 points, then she must deliver in a county level hospital.

The township health care providers and key informants thought that the high risk strategy works well. By identifying high risk women, measures can be taken to minimize problems for her and the baby. However they identified several problems with the strategy. Staff are not skilled enough to identify all high risk women, and they miss many women. Many women appear as emergencies and should have been identified as high risk women and managed differently. Even if high risk women are identified, then they need skilled and experienced staff to look after them through labour.

"The scoring system is in training books and health-care handbooks. High-risk women may have a variety of surgical complications, anaemia, weight, height, pregnancy-induced hypertension, early rupture of membranes, placenta praevia, uterine scar, etc. There are a lot of risk factors. It isn't a policy." IDI20, Dr, C, F, 45 years.

"We identify high risk women by enquiry, physical examination and laboratory test. First ask LMP, second measure blood pressure. If BP is higher than 140/90mmHg, urine is tested and finally is diagnosed. If the symptoms are obvious, high risk woman can be diagnosed. But our hospital lacks equipment for diagnosis and so we cannot identify all women." IDI24, Mid, T, F, 34years.

Perceptions of caesarean section

All health care providers and key informants said that the CS rate is too high. The health care providers said that the CS rate ranges from 50-70%, with increases in the last few years. The director of the county MCH hospital said that the CS rate should not exceed 20% in township hospitals and 30% in county hospitals. He thought this could not be achieved quickly because of several reasons. First, the hospitals rely on the revenue generated from CS to support the salaries and operational running of the hospitals. Second, women fear labour pain and perceive CS as having less pain. Third, managers and health care providers fear medical disputes arising from complications during labour and delivery.

Health care providers and key informants gave several reasons for the increase in numbers of CS. They identified several reasons why women request CS including: labour pain cannot be relieved and they perceive CS as being quick and without pain; CS is perceived by women as being safer than NVD; women who know they are having a male baby, will request CS as this is seen as a safer mode of delivery and male babies are seen as being precious. Doctors provide CS because: it is difficult to monitor progress of labour and CS is quick to perform; complications are more likely to happen with NVDs resulting in medical disputes and loss of earnings; they are not skilled at identifying women who can have NVDs and when to intervene with CS; and as result of doing more and more CS, the skills and confidence to do NVDs have reduced.

All respondents thought it is difficult to reduce the numbers of CS. A minority gave some possible solutions. It is important to give women information about NVD and promote this method. However women may still choose depending on their circumstances, for example, women who are having their second child will frequently choose a CS so that a tubal ligation can be done at the same time. The director of the health bureau thought that one of the aims of the people's livelihood project is to reduce the CS rate, through ensuring a sufficient number of skilled birth attendants and providing people with information about choice of delivery. This project has just started and its impact is not known.

"In the 90's, the higher-level hospital caesarean section rate is high, but it is low in the primary hospitals. But now many pregnant women are afraid of pain, and we have no pain-free childbirth but

we give them health education during pregnancy that natural childbirth certainly has advantages over caesarean section. Our last CS rate was about 50%, it was about 30% when I came. Though emergencies during pregnancy are rare, some doctors are afraid of disputes, so they advise them to choose caesarean section." IDI20, Dr, C, F, 45years.

"The people's livelihood projects want to reduce the caesarean section rate. One of the important means is to provide a sufficient number of skilled birth attendants. The other is to give people information about delivery. Fear of medical conflicts is the main reason for the high incidence of caesarean section. Now this makes it difficult to reduce the rate." KII2, M, 57years.

"Now WHO is advocating caesarean section rate should not exceed 15%. But we cannot achieve that, may be because our women are different." KII4, F, 50years.

5.4.3 Care during the 1st stage of labour

Admission procedures

In the township hospitals and county level hospitals, the health care providers explained that on admission the woman and her family must attend to administrative affairs which include getting a hospital bed, signing the consent form and paying an advance of money. Then women have abdominal, vaginal and rectal examinations, electrocardiogram, ultrasound scan and blood tests. Health care providers felt that these tests were very important in identifying any abnormalities and then providing appropriate treatment or referral to higher level hospitals. They said that without these tests they would not deliver the woman in their hospital.

On admission to the TCM hospital women in early labour go to the classroom to receive information about delivery. If they decide to have a NVD then the doctors and nurses will tell them about labour pain and that they have to cope with the pain.

"When a woman arrives at the hospital in labour, we do administrative things, investigations, signature. Administrative things include hospital bed, consent, examinations. Investigations like blood tests, ECG, ultrasound, obstetric examination, others. They are very necessary." IDI23, Dr, T, F, 37years.

"After they entered hospital, the first place they should go is the class room for getting routine information. The doctor tells them that if you choose natural childbirth you need to be prepared for the pain. They have some psychological counseling." IDI20, Dr, C, F, 45years.

Consent for hospitalisation and delivery

All health care providers reported that women or their families must sign a consent sheet when being admitted to hospital for delivery. This is a different form to the general admission consent form. If they have a CS then they will need to sign a CS consent form.

In the county hospitals, both women and family members are required to sign the form. This gives the family power of attorney so that they can make decisions on behalf of the woman. The form includes an agreement to the treatment being given and lists the complications of delivery. Most women and families do not look at the form and the doctors explain the common complications. As the consent form is a part of the notes, if it is not signed then the notes are not complete. Some providers thought that this form is a good way to make women and families consider their situation and care more seriously.

In the township hospitals, most health care providers thought that one person, the woman or a relative can sign the form. The majority thought that the main purpose of signing the form is to reduce the number of medical disputes: if a problem happens the family will not be able to blame the hospital or doctor. The form explains the emergencies that may happen, and that these cannot always be prevented or treated.

"Doctors, husbands, family members or themselves sign the consent forms. Signing reduces the occurrence of medical disputes. Signing the consent does not mean that we won't be responsible for women, the purpose of signing this form is to make women and family members know something about the risks." IDI23, Dr, T, F, 37years.

Assessing progress of labour

All the providers said that they do one vaginal examination when the woman enters the hospital, followed by rectal examinations every 2 to 4 hours to assess cervical dilatation, adequacy of pelvis and descent of presentation. They explained that vaginal examinations can cause infections, and believe rectal examinations to be safer. A minority of health care providers reported that they conduct rectal examinations every 15 minutes once the woman's cervix is 5cm dilated.

All providers said they used the partograph to record the dilatation of the cervix, descent of foetus and blood pressure. They thought it was useful to monitor the progress of labour, detecting abnormalities and identifying when CS should be done. One provider said she did not use the partograph for 2nd or subsequent pregnancies.

To assess the foetus, most healthcare providers said that they listen to the foetal heart. They were

unclear about how frequently they monitored the foetal heart. Some also said that they count the foetal movements during labour. All the providers said that they also carry out an ultrasound scan to assess the amniotic fluid, placental function, foetal position and any foetal abnormality. They said that if the amniotic fluid is cloudy then they would tell the woman that this is a sign of foetal distress and advise her to have a CS.

The majority of health care providers reported that they monitor the woman's pulse and blood pressure at the start of labour. If her blood pressure is normal, then it will not be repeated until after delivery. If it is abnormal then it will be repeated several hours later.

"We try our best to ask them to receive rectal examinations. Vaginal examinations can be done only if strict disinfection is implemented." IDI13, Dr, C, F, 49years.

"We depend mainly on listening to the foetal heart. If the amniotic sac breaks, we will observe the fluid or else we'll use ultrasound to examine the amniotic fluid. If it is cloudy we will tell the woman. We want to prevent foetal distress." IDI24, Mid, T, F, 34years.

Using the partograph

When health care providers were asked about using the partograph, some said that they used the partograph for every woman and it was easy to use. However some doctors and midwives said that they did not use the partograph for several reasons. It is not necessary for women with normal pregnancies and labours, and is only used for women perceived as being high risk or having complications to identify prolonged labour or any abnormalities. Other reasons include: there is only one copy of the partograph and have not received any from the County Hospital, health bureau or MCH station; it is possible to assess labour without this; the partograph would be used if there are more deliveries; and the previous doctor did not use the partograph.

Amongst the doctors who did use the partograph, most said that it was easy to use. One doctor said it takes too much time to complete it. She also said that some women deliver quickly and so a partograph is not needed.

Most doctors and midwives acknowledged that the partograph is useful to monitor the progress of labour and identify prolonged labour or complications. It is easy to see the latent and active phases of labour.

Some health care providers reported that they had training on use of the partograph during the compulsory training they receive every 2 years. Some also said that they had recent training as part of the CHIMACA project. Although this encouraged them to use the partograph, they also said that

they quickly forgot to use it. Others reported that they had not had any training for up to 10 years. One doctor reported that as managers do not understand the partograph and do not look at them, they do not send their staff for training.

"We do not use the partograph. We have never used the partograph. I know that we should use it, but for management reasons we do not. The old obstetrician did not use it. He retired in December 2007. So we plan to start using it now. We have the partograph from the County Hospital. I need to copy it and start to use it." IDI3, Dr, T, F, 40years.

"Using the partograph is easy and convenient. In this hospital, the midwives and obstetricians use partograph to monitor the whole labour process. It is very useful. It will help us to recognise some abnormal things in labour such as prolonged labour." IDI15, Mid, C, F, 35years.

"We have had training on using the partograph in the CHIMACA training last year and in 2000. They were useful. They gave practical tips on how to use the partograph which would be useful if you used the partograph. The CHIMACA project encourages us to use the partograph. Immediately after the training, I was encouraged to use it, but then later I forgot. There is a gap between the ideal and the actual!" IDI6, Dr, T, F, 38years.

Eating and drinking during labour

All the health care providers said that they encourage women to eat and drink during labour as this will give them energy to go through labour and deliver the baby. However if they are unable to eat or drink, then they give intravenous fluids. A few providers said that they add vitamin C to an intravenous infusion.

"We advocate giving some soup or chocolate. She needs enough energy to deliver, if she does not have enough energy, there is a series of consequences." IDI20, Dr, C, F, 45years.

Use of intravenous fluids

The majority of health providers said that they do not routinely give women intravenous fluids during labour. They give fluids in the following situations: when there is uterine inertia to prevent PPH; when it is necessary to give her drugs; and long labour when the woman uses up all her energy. However, one doctor reported that 90% of women have intravenous fluids during labour as they are unable to eat and drink and this will provide energy. Only women who have quick labours will not have intravenous fluids, but will receive them after delivery.

All health care providers said that they do not routinely give intravenous infusions of oxytocin. They

reported using it in the following situations: weak and infrequent uterine contractions; vaginal bleeding; and when the woman is very weak. If oxytocin infusion is not given then the labour will be prolonged and this will cause maternal fatigue and foetal distress.

"From the 1990s, to prevent postpartum hemorrhage we routinely put up IV fluids, it is good for reducing postpartum hemorrhage." IDI18, Dr, T, F, 60years.

"In general, I routinely use oxytocin after delivery, but not for pre-delivery. The following conditions I will put up IV oxytocin: no obstetric contraindications, there is uterine inertia, or various aspects of the conditions are not suitable for natural childbirth, or uterine inertia affecting the birth process." IDI20, Dr, C, F, 45years.

Mobilisation during labour

The majority of county and township level health care providers said that they encourage women to mobilize during labour until the cervix is between 4 to 6cm dilated, when women then lie on the delivery bed. They thought that mobilization helps women relax and progresses labour. However, there are situations when they advise the woman to lie down: when she has no energy; when the membranes have ruptured; and when the baby is small because labour will progress quickly. One health care provider explained that all women should rest on the bed to save their energy for delivery.

"Some experts claim that we shouldn't restrain the posture, because women in labour are very uncomfortable. I think she should consider how she feels, and she can walk sometimes. When cervix is open about 6 centimeters they shouldn't." IDI20, Dr, C, F, 45years.

"If amniotic sac doesn't break, we encourage women to walk in the room and it helps to improve the process of delivery and relax themselves. When the cervix expands to 5cm, we ask them to stop walking." IDI24, Mid, T, F, 34years.

Companionship during labour

Most county and township level health care providers said that they encourage relatives to accompany women during labour. They thought that women want mothers or husbands with them and it makes them feel more comfortable, safer and relaxed. Most relatives want to accompany women; however a few health care providers said that some relatives are frightened of being in the labour and delivery rooms.

The majority of health care providers in the township hospitals reported that they try to stay with

women during labour to provide support, reassurance and help them manage the pain. However, in the county hospitals, doctors and midwives said they are usually too busy to stay with women and so ask the women to call for them when the pain is severe.

One county level health care provider said that in higher level hospitals, if a woman is alone in the labour room they will arrange staff to stay with her all the time. As they do not have enough staff to do this in their hospital, they encourage family members to support women. One township health care provider said that only the woman's mother should accompany the woman as they have experience and can support her well. They felt that the husband cannot take on this role.

"When a patient comes here, I explain if uterus doesn't open, you just wait slowly. As the process continues, you have to observe more and more frequently. You have to touch her stomach and give her comfort. How can I have time to go to other places? The grass-roots level is unlike superior hospitals. In superior hospitals, if you call a doctor, the doctor will ask you not to shout. But in our hospital I would like to sit by her and talk with her family. If you leave, she will feel like the sky has fallen down and will look for you everywhere. She will be frightened." IDI8, Dr, T, F, 43years.

Shaving pubic hair

Health care providers in the township hospitals and the TCM hospital said that they usually do not shave the pubic hair. However, they explained that in some situations they would shave: if the pubic hair was very thick to reduce risk of infection; and if the woman was at high risk of having a CS. In the County Hospital, most health care providers reported that they usually shave the pubic hair to prevent infection.

"Sometimes we shave, and sometimes not. When it is natural labour, if the hair is too long and too low or if caesarean section, then we will surely shave. It will prevent birth canal infection." IDI18, Dr, T, F, 60years.

Giving enemas

All providers reported that they do not routinely give enemas to women during labour. They said that it will cause over stimulation of the uterus resulting in too many contractions, amniotic fluid embolism and foetal distress. Some providers said that they would give an enema if the uterine contractions are weak or if there is pre-labour rupture of membranes.

"Enema is not routine. I may do enema if contractions are not very good or pre-labour rupture of membranes and some other unusual situation." IDI20, Dr, C, F, 45years.

Pain relief

All health care providers said that they do not give pain relief to women during labour. They tell women about the process of labour and try to make her relax and comfort her. They also give women information about labour pain in the antenatal clinic advising that labour pains are normal and that every woman must experience this when they are having a baby. They explain that labour is a process and it takes time to progress through labour. If they want to have a NVD, then they must endure the pain. Most women accept that this will be painful, whilst others are very frightened of the pain.

Pharmacists also said that doctors do not give pain relief to women during labour and delivery. In the pharmacies within the hospitals, there is a range of pain relief drugs. See table 5.11 below for a list of the different types of pain relief available in the hospitals.

Table 5.11: Different types of pain relief available in study hospitals

Oral pain relief	Injectable drugs	Local anaesthetic	Regional anaesthetic	General anaesthetic
• aspirin • codeine phosphate • indomethacin • ibuprofen • oxaprozin • aminophrine • morphine sulphate • raceanisodamine	• pethidine • tramadol hydrochloride • ketamine • bucinnazine • morphine and atropine sulfate • raceanisodamine	• lidocaine • bupivacaine • procaine • teracainum • tetracaine	• lidocaine • bupivacaine • ropivacaine • tetracaine with ketamine and ephedrine	• haloperidol • phenobarbitone • ketamine • Propofal • Midozolam • Etomidate fat emulsion • Fentanyl citrate

There was a variety of reasons given for not giving pain relief to women. Most thought that the drugs can be dangerous to mother and baby, in particular affecting the baby's breathing. Others reported that: the drugs will enter the breast milk and affect the baby; pain relief has no effect on the mother; if pain relief is given then it is difficult to observe the progress of labour; labour pains are natural and women should be able to tolerate them; pain relief will slow the contraction down; and pain relief can cause stronger contractions. However, a minority of health care providers had different views. A few perceived that although labour pains are natural, some women need pain relief and doctors and midwives need to learn how to manage the pain. Others stated that they did not know which drugs could be used for women in labour and how to use them.

Most health care providers said that local anesthetic is not used for episiotomy or suturing as it will cause oedema and interfere with the healing process. Some also thought that if women have coped

with the pain of labour and delivery then they can manage the pain of suturing.

Many doctors talked about "painless delivery". When they were asked to define this term, many could not describe what they meant and said that they did not know what drugs are used and how they were administered. However they all wanted to introduce this into their hospital. A few doctors said this referred to regional anaesthesia during labour. They thought this was a good method of pain relief as it can relieve the pain of labour completely and lessen any fear the woman has. Provincial hospitals are able to give epidural pain relief, but this is not possible in county and township hospitals. However, one doctor thought this was difficult to do and required to be started at a certain point during labour and all aspects of the woman need to be normal. She thought that if this was provided, the CS rate would be reduced dramatically. Another doctor said that there are many side effects to this method and until it was safe and easy to use, they will not recommend it.

Most pharmacists said that they rarely give general anaesthetic to any patient including pregnant women. Spinal anaesthetic is used for CS. After a CS, women can have pethidine hydrochloride injection because it has a good pain relief effect. Women who have never used such kind of pain relief drugs should only be given one injection. Other drugs such as tramadol hydrochloride injection and buccinazine injection can be given. When women have an abortion, lidocaine hydrochloride injection was usually used.

In one township hospital, there are no drugs or equipment for general anaesthetic. Operations which require general anesthesia cannot be done and these patients are usually referred to higher level hospitals. Occasionally, doctors and anaesthetists from higher level hospitals are invited to do general anaesthesia and operation.

"For pain in labour, if we give her drugs, it will affect the uterine contraction. We can use pethidine and diazepam but we need the manager's signature." IDI21, Mid, C, F, 33years.

"I don't recommend using pain relief during labor and delivery because it is a natural process and pain relief drugs may go to the babies through breast milk. Pain relief has no effect on the mothers." IDI22, Pharm, C, M, 48years.

"I tell them in advance that birth should be a physiological process, but there will be pain. Caesarean section is relatively less in terms of trauma. The views of their parents will also have an effect." IDI20, Dr, C, F, 45years.

"I tell her the process of delivery, and comfort her, and tell her about IV fluids. We can't use drugs. We don't know how to use them. I don't know which drugs can be used." IDI18, Dr, T, F, 60years.

5.4.4 Care during 2nd stage of labour

Companionship during delivery

The majority of healthcare providers in the township hospitals encourage family members, such as the mother or husband, to accompany women in the delivery room. They felt that this makes women less nervous, encourages easier delivery and reduces complications. One doctor thought that companionship during delivery along with health education can reduce the numbers of CS. However, some midwives and doctors, particularly in the county level hospitals, thought that only doctors and midwives should be with women explaining that family members are often frightened which can make women more nervous and results in more difficult deliveries.

"We do not need the family members to accompany in the delivery room. I think it is not good, first pregnancy she will be very nervous when she sees the family members, secondly the relatives may discourage themselves, so that would be detrimental for delivery." IDI21, Mid, C, F, 33years.

Position for delivery

All the providers reported that women lie flat on the bed, with their legs bent and apart. Some said that they use the lithotomy poles. They explained that this position is good for delivery as it helps with pushing, is comfortable for women, is easy for the doctor to see the progress of the delivery and can protect the perineum from tears. This position is advocated in the obstetric textbook.

"The woman lies down on the bed, two legs bent and put apart and using the brackets in the bed at the same time. It is better for delivery. We can clearly examine every aspect in this position." IDI23, Dr, T, F, 37years.

Giving episiotomy

The majority reported that they do not give episiotomies to all women but only in the following situations: the perineum is tight, the baby is big, premature delivery and the head is on the perineum for a long time. However several health care providers reported routine provision to all primigravida or to all women to speed up the delivery to prevent foetal hypoxia.

Most providers, although believing that they should give local anaesthetic, very rarely give it. They only give it if the woman is in a lot of pain. One doctor explained that she is reluctant to use local anaesthetic as cyanosis of the tissue may occur around the site of the injection.

"If the condition of perineum is good, we will consider she can deliver by herself, we will not cut the perineum. In general, nowadays our living condition is good, and the first infant is bigger than ever, I

will do an episiotomy. We do not use anaesthesia; we wait for the uterine contraction and then cut directly." IDI16, Dr, T, F, 36years.

Fundal pressure in the 2nd stage

The majority of health care providers said that they sometimes give fundal pressure in the following situations: uterine inertia; unable to do CS; baby is very big; woman lacks energy and strength to push; and the baby's head is low down in the pelvis for a long time. However, they also identified that there were risks to the women's health with this practice including rupture of the spleen or liver.

"Fundal pressure is generally in the second stage of labor, but this is not common, unless there is no other way , for example, can't do caesarean section, or the baby is very low for a long time. And we should avoid liver or spleen rupture." IDI20, Dr, C, F, 45years.

Intravenous infusion of oxytocin

All health care providers said that they do not routinely use intravenous infusion of oxytocin in the second stage of labour. They use it when contractions are weak or infrequent to prevent a long second stage and foetal hypoxia; and when the woman is very weak.

Assisted delivery

All health care providers said that obstetric forceps are not used nowadays. Vacuum extraction is occasionally used when there is uterine inertia or when the baby needs to be delivered quickly. CS has replaced both procedures.

"We don't use the obstetric forceps. It can cause too much damage. If there are problems we do CS." IDI21, Mid, C, F, 33years.

5.4.5 Care during 3rd stage of labour

Use of oxytoxin

Half of the health care providers in the township and county hospitals said that they give IM or IV oxytocin to manage the third stage of labour, and apply cord traction to deliver the placenta. Some said that they gave fundal pressure to help deliver the placenta. Others said that they apply traction to the umbilical cord to deliver the placenta, but do not use an oxytocic drug. A few doctors in the township and county hospitals said that they occasionally use oxytocin if delivery of the placenta takes longer than 15 minutes. Most health care providers said that they examine the placenta for completeness, size and formation. They also assess the amount of blood loss by looking at the pads

and measuring in a bowl.

"As for the separation of placenta, one hand pulls the umbilical cord and the other presses the fundus. We use IM oxytocin." IDI24, Mid, T, F, 34years.

"The placenta delivers itself, if the placenta is not delivered in half an hour, we will deal with it. If the uterus is very soft, possibly because of uterine inertia, we will massage uterus, strengthen the use of uterine muscle. If she cannot be delivered, it is necessary to manually strip." IDI21, Mid, C, F, 33years.

Intravenous fluids

The majority of health care providers said that they only put up intravenous fluids in situations when they were needed, such as: heavy blood loss; woman is exhausted; long labour; and uterine atony. However one doctor said that she gave intravenous infusions with oxytocin to all women to prevent postpartum haemorrhage. This infusion is usually continued for two days.

"If the woman is fine, there is no need to put up IV fluids. We use it in the circumstances when there is uterine atony and bleeding quite a lot, also a long labour." IDI21, Mid, C, F, 33years.

Suturing of tears and episiotomies

Most health care providers said that they examine the perineum and vagina for tears. Some said that they do a vaginal and rectal examination. One doctor said that he would assess the cervix for lacerations. The majority of the doctors and midwives said that they do not use local anaesthetic to suture tears and episiotomies. All providers said that they routinely give intravenous or oral antibiotics to women who have any tears and episiotomies.

"When doing episiotomy and sewing, we rarely give these drugs (local anaesthetic) *to women. Women have experienced very strong pain during labor and delivery, so they will not feel much pain during sewing."* IDI19, Pharm, T, M, 42years.

5.4.6 Immediate care post delivery

Stay in delivery room

Most health care providers reported that women stay in the delivery room for two hours following delivery. Doctors and midwives observe women for uterine contraction and bleeding as postpartum haemorrhage is most likely to happen during this time. On transfer to the ward they are regularly assessed: vital signs; uterine contraction; and amount of bleeding. The baby is also assessed: respiratory passages; umbilical cord is clean and not bleeding; colour of the skin; and temperature.

"We clean the bed and observe her for 2 hours, or at least 1 hour. Then we measure her blood pressure and see if the fundus of uterus and vagina is ok. If everything is ok, we will ask her husband to carry her to the hospital room. Sometimes brave women will walk." IDI7, Dr, T, F, 33years.

Breastfeeding

Most health care providers said that they encourage women to breastfeed the baby within 1 hour of delivery. They said that they show her what position to adopt and help her with feeding. However others said that women first breastfeed the baby on the ward if they are well. If they are exhausted then they do not feed the baby. One doctor explained that a few years ago most babies would not breastfeed for three days. However, this has changed in that women are encouraged to breastfeed much sooner, but they are still unable to ensure that babies breastfeed in the first few hours.

"We bath the baby, wash the nipple for the mother and guide the mother how to breast the baby. If the mother's condition is good, we will let the mother breastfeed the baby when she arrives on the ward, otherwise we will not let her breastfeed." IDI24, Mid, T, F, 34years.

Use of drugs

All health care providers said that they do not give pain relief following delivery as they believe women do not have pain after delivery. One doctor said that if the perineum is painful then they will advise to use a hot towel. In both township and county hospitals, most women regardless of suturing, are given oral or intravenous antibiotics to prevent infection following delivery.

"We usually give the woman antibiotics after delivery, intravenous benzyl penicillin. It will prevent infection." IDI18, Dr, T, F, 60years.

Hygiene and mobilisation

The majority of health care providers said that family members will help women wash every day. The nurses teach her how to clean the perineum with lotion, alcohol or iodine. Women get up after 2-4 hours following the delivery. They encourage them to mobilise and pass urine. If they are weak then the family will help her.

"We use alcohol cotton to wash perineum and the family member will help woman bath. If there is serious pain, we can use hot towel for the woman and then they feel comfortable. We will advise the woman to mobilise after 6 hours of delivering to stop any bleeding." IDI24, Mid, T, F, 34years.

5.5 Conclusion

This chapter presents findings from: the facility assessments; reviews of the registers, records and partographs; and interviews with health care providers, managers and key informants. It describes the availability and provision of delivery care in the study hospitals. In Table 5.12, the key findings are summarised in relation to current evidence based practices.

Table 5.12: Summary of findings from qualitative and record investigations against current evidence

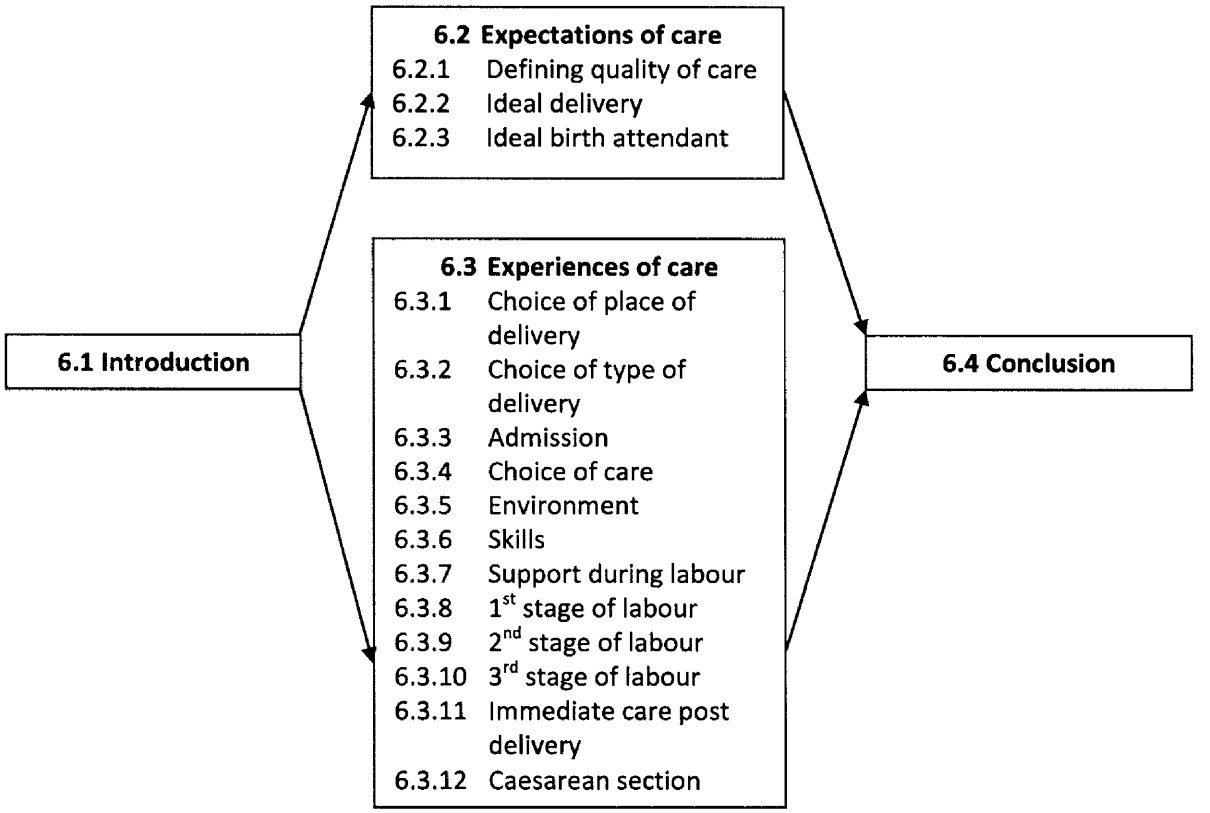
Current evidence	From qualitative investigations	From records assessment
Should be routine		
Active management of third stage	½ respondents use AMTSL	84% of notes recorded use of oxytocin for 3rd stage
Newborn put on breast immediately after birth	Majority encourage breastfeeding within 1 hour	Not recorded
Should be encouraged		
Mobility during labour	Majority allow women to mobilise up to 4-6 cm	Not recorded
Companionship	Majority encourage family members to stay with women in labour Township hospitals allow companions in delivery room County hospitals do not permit family members in delivery room	Not recorded
Oral fluids	All encourage food and fluid intake	Not recorded
Partograph	Some use partograph for all women Some use partographs only for women with complications Some do not use partographs	63% of records had a partograph 0% met 17 criteria for correct completion
Pain relief	Pain relief drugs available in all facilities All reported not giving pain relief	Not recorded
Should be avoided		
Routine episiotomy	Give episiotomies in some situations e.g. large babies	53% of women received episiotomy
Routine perineal shaving	In township and TCM hospitals perineal shaving is done only in some situations In County Hospital it is a routine practice	Not recorded
Routine enema	All do not use enema routinely	Not recorded
Rectal examination	All reported doing rectal examinations	39% women received at least one rectal examination
Intravenous fluids	Majority give IV fluids in certain situations only	41% received
Supine position	All conduct deliveries in supine position	Not recorded

Chapter 6: Expectations and Experiences of Care

6.1 Introduction

In this chapter I will firstly describe women's and mothers' expectations of care delivery during labour and delivery, reported during the interviews and FGDs with women and mothers. This includes what quality of care means to them, what the ideal delivery would be like and who their ideal attendant would be. The chapter goes on to describe the perceptions of women and mothers of their actual experiences of care: the care they received and their views on this care. In the conclusion, there is a comparison of expectations and actual experiences.

Figure 6.1: Overview of chapter



6.2 Expectations of care

6.2.1 Defining quality of care

The majority of women and mothers constructed similar definitions of quality of care. However, some mothers found it more difficult to verbalise their meaning of quality of care. Table 6.1 illustrates the majority responses to defining quality of care.

Table 6.1 Majority views of women and mothers on quality of care

Women	Quality of care	Mothers
Safety of mother and baby		Safety of mother and baby
Health care providers are able to communicate		Health care providers are able to communicate
Result in a healthy mother and baby		Health care providers are skilled
Knowledge to be prepared for childbirth		Responsible attitude; fulfill their professional duties
Equipment is available in the delivery room		
Environment: clean and comfortable rooms		

Almost all women said that ensuring safety of mother and baby was very important. They reported that a successful delivery resulted in a healthy mother and baby. This was associated with the skills of health care providers. They identified specific skills which were seen as important: listening to the foetal heart; assessing the progress of labour; disinfection of equipment and materials; and ability to ensure that women do not feel pain during CS. Safety was also associated with the availability of equipment in the delivery room: many women felt that it was safer to deliver where there was equipment in the delivery room.

"Quality of care means safety of mothers and babies. There must be enough equipment in the delivery room, there should be more doctors on at night in case of emergency. It is difficult for only one doctor to deal with the emergency." FGD3, W, ND, T, 35yrs, Multi.

Many women perceived that doctors and nurses should be able to communicate well with women and their families. Doctors and nurses should have a good attitude towards women meaning they are able to: show concern regardless of any problems; comfort women during labour and delivery; be kind, respectful and friendly; give information so that they understood what was happening; and seek women's views and not just do what they want to do. Many women also felt that health care providers should treat everyone equally. They wanted to feel happy and have little fear or anxiety.

They wanted to understand more about labour and delivery so that they are more prepared for childbirth.

"The comfort and encouragement of the doctors are important. Furthermore, the doctor should see the women in time so that they can find some problems. A bad manner will make women unhappy. If she is not friendly, you will be more uncomfortable and angry." IDI22, W, ND, T, 23yrs, Primi.

"I hope the doctor could explain clearly to us, in order to calm us, and then we prepare for it better." IDI5, W, ND, C, 33yrs, multi.

Many women thought that the hospital environment was also important and in particular the cleanliness and the facilities provided. They wished the hospital to be clean and disinfected to prevent infection; and to be more like home.

"The environment must be clean; it is not good if the hospital is dirty. It is ok in this hospital, the attitude is good, the doctors are good, nurses are good, they are careful." IDI20, W, ND, T, 30yrs, Multi.

A few women talked about quality in other ways. Management of emergencies during childbirth is important: doctors should be able to manage emergencies; more doctors should be on duty at night to deal with emergencies; and there should be more equipment so that doctors can manage any problems. Others reported that there should be little pain during childbirth; doctors should be able to help them to manage this pain and women should receive very few vaginal examinations as they are painful. Other women assessed the quality of care by speed of recovery from CS and healing of the wound.

Many mothers said that it was difficult to define quality of care. However when probed they were able to describe what was important to them. Most identified that ensuring the safety of the mother and baby was the most important aspect of care. Many also described the attitude of the staff as being significant: staff should be responsible towards women and fulfill their professional duties; they should treat women well, be gentle, kind and considerate; visit frequently and give care when needed; and show concern after the delivery. Most mothers considered that the skills of the doctors and nurses were important. They should be competent, assess mothers and babies with care and have the skills to manage problems during delivery, as these can arise unexpectedly.

A few mothers talked about other aspects of quality. They said that women should feel satisfied with the care that they receive. The environment should be clean and tidy. Staff should assess the baby carefully, help care for the baby and show the woman how to look after her baby. A few mothers

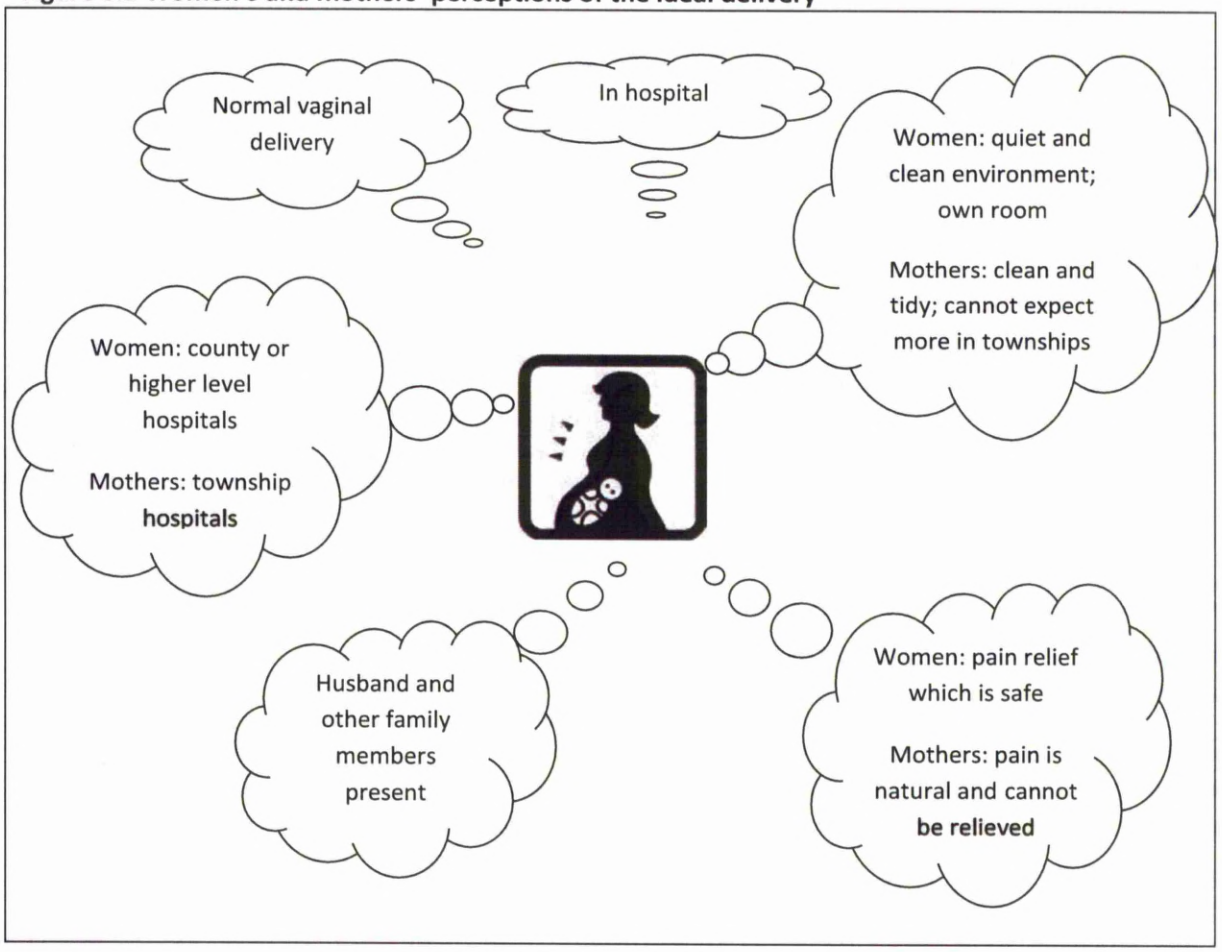
found it difficult to say anything about quality of care.

"Good environment; provide good services with good attitude - "come when needed"; and treat every patient in the same way and not look down on rural people. That's enough." IDI5, M, CS, C, 56yrs.

6.2.2 Ideal delivery

Perceptions of ideal delivery are divided into several areas: type of delivery, place of delivery, hospital environment, companionship, position for delivery and pain relief. Figure 6.2 presents a summary of women's and mothers' views about ideal delivery.

Figure 6.2 Women's and mothers' perceptions of the ideal delivery



Type of delivery

The majority of women and mothers reported that the ideal way to deliver was by NVD. Their reasons for preferring NVD were: there is a quicker recovery and shorter stay in hospital; there is

less pain following NVD; it is better for the baby as it improves his/her immunity and intelligence. Minority views included: many years ago most women would have NVD unless they had difficult labours; had NVD with the first baby; it is safer; women lose less blood; the mother can leave her daughter in hospital following a NVD but if she has a CS, then the mother must stay to look after her daughter; and with a caesarean delivery the baby does not go through the NVD process and is therefore not "ready" for life outside the uterus.

"I think that the normal labor is beneficial for the body, and the woman returns to normal after a few days, but caesarean section is harmful to health, and the scar is painful even after seven days." IDI4, W, ND, C, 24yrs, Primi.

"We should let nature take its course, because whatever you do it will be very painful." IDI15, W, ND, T, 29yrs, Multi.

For a few women, CS was seen as the ideal mode of delivery. They perceived it as less painful as anaesthesia is given; they fear the pain of labour and delivery; they can have tubal ligation at the same time; and they can choose the date of delivery.

"I want to give birth by myself at first, but I'm afraid of pain, and chose to have uterine-incision delivery." IDI6, W, CS, C, 26 yrs, Primi.

Place of delivery

Almost all women and mothers thought that women should deliver in hospitals because this was safer for the mother and baby as health care providers are immediately available to deal with any problems. They also identified that nowadays home deliveries are not allowed. Women perceived that there is less pain if you deliver in hospital. Mothers recognised that the conditions in hospitals have improved and this encouraged families to deliver there. However, a few women wanted to deliver at home because they felt embarrassed about lying on the bed and delivering in front of people.

"It's better to deliver in hospital. Delivery can't be at home. If the baby can't be delivered midwives have no way to help me at home. But if I was in hospital there are lots of doctors who could help me." PI1, W, ND, C, 26yrs, Primi.

Most women wanted to deliver in county level hospitals. They perceived that the county hospitals are comfortable, clean and quiet with good equipment and have health care providers who are skilled and able to manage emergencies. A few women identified different reasons including: the county hospital is ideal as everyone delivers there; women who wanted a CS choose the county

hospital as they think women are more likely to have a CS in a bigger hospital such as the county hospital; in contrast a few women who wanted a NVD thought that women are more likely to have a CS in the township hospitals; older women should deliver in county hospitals; it is cheaper than city hospitals; and as a relative works in the county hospital she would receive better care there.

"The County Hospital will be economical and the condition is also good. The City Hospital has better condition but will cost too much." PI2, W, ND, C, 25 yrs, Primi.

Most mothers said that women should deliver in the township hospitals. They believed that other hospitals are too expensive and are far away from their homes making it difficult to travel to and from the hospitals. They believed that townships hospitals can manage normal childbirth and so there is no need to go to higher level hospitals unless there are problems.

"I would like her to deliver in township hospital. It's good to be near my home, right? The county hospital is so far. The doctor treated us well, and every time we examined, her attitude is very good." IDI9, M, ND, T, 51yrs.

A minority of women had differing views. Firstly several women thought that the township hospital was the ideal place for childbirth. They had several reasons for this perception: township hospitals are close to women's homes and so it is easy to travel there for delivery and relatives to visit; all women living in the townships delivered in the township hospitals; there is enough equipment to do deliveries; the township hospitals are able to prepare blood in case of any emergencies; and they had previous deliveries in the township hospitals with no complications. Secondly, a few women reported that delivery should take place in city hospitals where the environment, equipment and staff are better, but only if they had enough money and adequate transport. Thirdly, a minority of women did not specify the level of hospital but said the hospital should have good conditions, advanced equipment and enthusiastic staff. One woman said she would prefer to deliver at home as it is very clean and quiet and relatives can more easily look after her and the baby at home.

"People said it was better to go to big hospital, in case there are some problems, they could conduct CS. I asked the doctor in one hospital whether they could do CS and she said no, so I didn't go there. In addition, I was 37." IDI26, W, ND, T, 37yrs, Multi.

Women appeared to "trade off" certain aspects of the different hospitals. For example some women reported that although the facilities are not so good as larger hospitals, the township hospitals are close to home so transport is easier and quicker; choice of place of delivery depends on the condition of the baby - if the baby is healthy, then delivery can take place in the township hospital and if the baby is unhealthy, then the county or higher levels are better.

"I would like to deliver in the Chinese medical hospital where I usually come to see a doctor. I am familiar with it; it is clean, quiet and comfortable. Conditions are worse than hospitals in the cities, it has less equipment and smaller rooms, but at least it is clean." IDI3, W, CS, C, 24yrs, Primi.

A few mothers preferred the county level hospitals. They had more confidence in the skills of the staff and they perceived the hospitals as cleaner, larger and more comfortable than township hospitals. They reported having previous good experiences in the county hospitals.

Hospital environment

Most women expressed that the hospital should be clean and quiet and every woman should have their own room following delivery. They also identified that the rooms should: have fresh air; have air conditioning; be comfortable with pictures on the walls; be tidy and regularly disinfected; be like home; and the delivery room should be small.

Mothers also hoped that the environment is clean and tidy but they did not think that anything else could be expected in rural hospitals. A few women and mothers did not consider the environment as their main issue was safety of the baby.

"The hospital should have good medical conditions, advanced equipment and enthusiastic medical personnel. It should be comfortable, air-conditioned and be clean." IDI4, W, ND, C, 24yrs, Primi.

Family present

The majority of women wished that their husband and / or their mother or other relatives be present during labour and delivery. They can provide support, encouragement and security and help them to relax. They also thought that if any problems occurred then it would be better if relatives were present. Women wanted their husbands in particular to be present so that they would understand what they had gone through during labour and delivery and also help with the baby.

Most mothers thought that the woman's husband and mother in law should be present so that they can fetch drugs and other things for the doctor. The husband should be there as he will be kind to his wife during childbirth.

A few women thought that as childbirth was a normal event and it is the woman's responsibility to manage labour and delivery, there is no need to have any family members there. A few mothers thought that the husband would not be considerate to his wife during childbirth as he has no experience of this, and so it would be better if the mothers are present.

"My mother, my husband. They can take care of me. They can give me encouragement. They can give me some food and drinks. If the quilt does not cover me, they can help me. I feel that if my relatives are present I feel better in my heart." FGD3, W, ND, C, 29yrs, Primi.

Position for delivery

When asked about the ideal position for delivery, most women and mothers had not considered this and could not respond. However, a few women thought that lying on the delivery bed with their feet in poles was the ideal position as everybody delivers in this position and it can decrease pain. Sitting for delivery is not safe as it may cause more bleeding.

"We all lie during the delivery in the hospital." IDI18, W, ND, T, 25yrs, Primi.

"I had not thought before, I think it is better to lie in order to decrease the pain." IDI25, W, ND, T, 25yrs, Primi.

Pain relief

Most women and mothers thought that pain during labour was natural and could not be relieved. Despite this perception, most women wanted to relieve the pain but thought that drugs could not help with this type of pain and can harm the baby. Some women thought that oxytocin infusion can help to speed up labour and help relieve the pain. Other women did not know about any drugs or methods to relieve pain. A few women said that women can have narcotic injections when they have CS and these drugs may help with labour pain. A few women reported that if there was pain relief available, then fewer women would have CS.

"Drugs are impossible. So I hope the doctor can help me and alleviate the pain by words. Except for oxytocin to speed up labor, I don't think drugs can relieve the pain." IDI1, W, ND, T, 24yrs, Multi.

"I hope that when I feel pain I can have some pain relief, but this is not possible. Otherwise there would not be so many people choosing cesarean section." IDI2, W, CS, C, 25yrs, Primi.

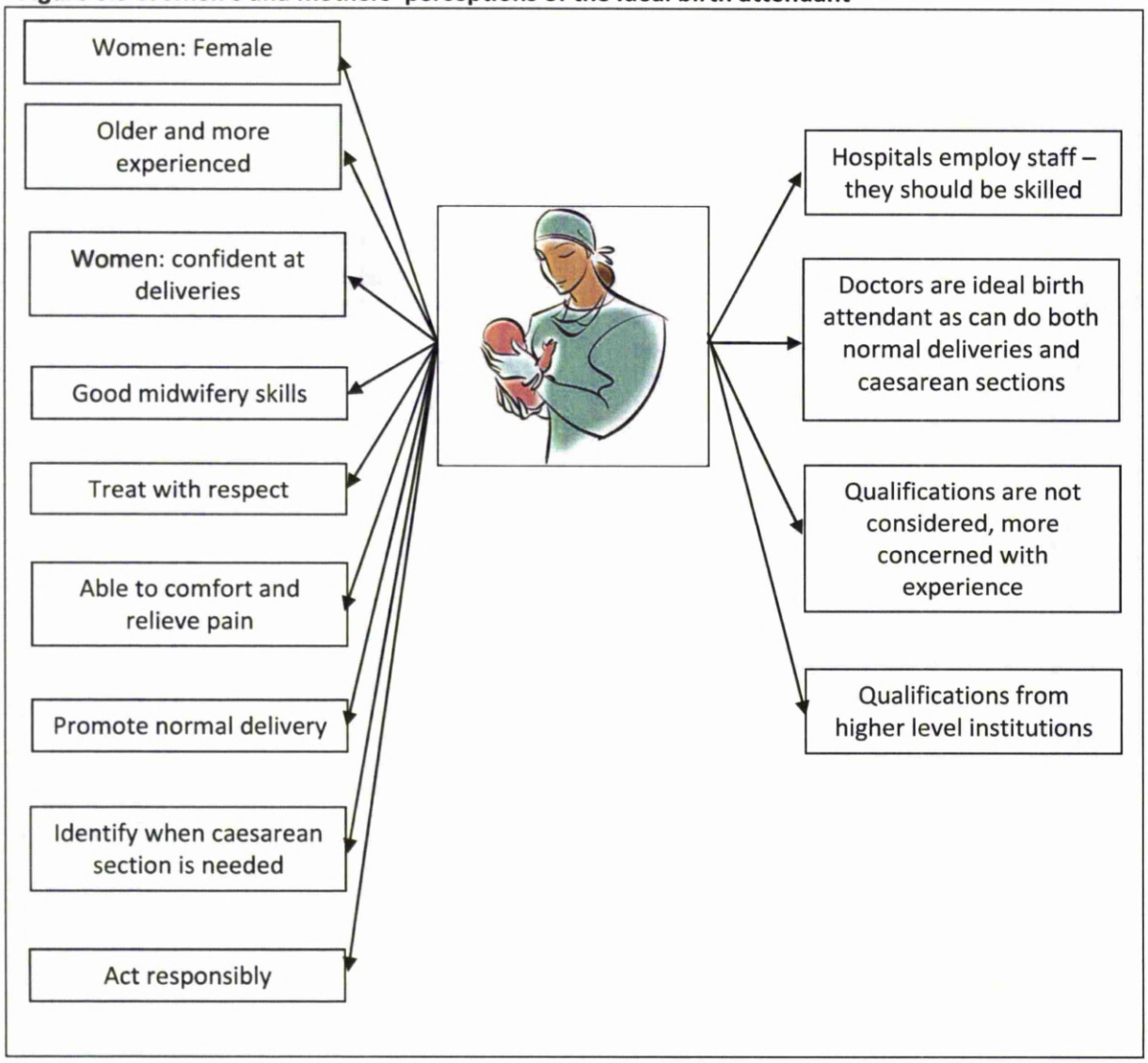
Some mothers thought that women will feel less pain if she delivers more quickly and it is up to the doctors to speed up labour and decrease her pain. In contrast, one mother explained that childbirth is controlled by the gods and so medicine should not be given to accelerate labour as this is detrimental to the baby. A few mothers had no knowledge of any drugs being available for childbirth, and that if there were drugs in the hospital they should be given.

"I think (oxytocin) should not be given. When the time is right, the chick will break the egg and come out. So the time is controlled by the gods. Why should we give women medicine to help delivery? It is better for the chick to come out naturally, not artificially break the egg. It is the same as childbirth. If you push the baby out using oxytocin, it is not good for the baby." FGD1, M, ND, T, 57yrs.

6.2.3 Ideal birth attendant

Perceptions of an ideal birth attendant are divided into two sections: skills and characteristics; and qualifications. Figure 6.3 presents women's and mothers' perceptions of their ideal birth attendant.

Figure 6.3 Women's and mothers' perceptions of the ideal birth attendant



Skills and characteristics

The majority of women thought that the ideal birth attendant is female as they felt it is embarrassing to be attended by a male doctor. They also perceived older doctors as better as they have more experience of doing deliveries, are more skilled, and can manage difficulties and emergencies. They wanted doctors with good skills and assumed that doctors will have good skills as this is their job. They also heard from other women and families whether a doctor is good. Many women could not say what skills should be good, but others gave the following examples: gentle at suturing; cause little pain; do not cause injury; confident at delivery; good at watching progress of labour; able to manage mother and baby well after delivery, and in particular cleaning and taking care of the baby. The majority of women would like attendants with the following characteristics: able to chat with women and make them feel relaxed; able to comfort them during labour; treat women with respect; no shouting at women; accept "bad language" during labour; and being responsible for women and their babies.

"An older woman because she has more experience. If there is an emergency, she can deal with it easily. I prefer if she is friendly and easy-going. A man will make me feel uncomfortable. She should have the skills of delivery." IDI6, W, CS, C, 26yrs, Primi.

"The doctors I called are all skilled at this because they all have worked for decades in clinical jobs. They should be good at the process of the delivery, such as delivery, abdominal delivery and so on. Very good skills. The doctor must not hurry and can control everything, making me feel comfortable." IDI15, W, ND, T, 29yrs, Multi.

A few women preferred to have younger birth attendants as they thought they would be able to communicate with them more easily. A few women thought an ideal attendant would be good at bathing and dressing babies, calculating the date of delivery, and work ethically by only providing care that is necessary.

Most mothers had not thought in detail about the skills and characteristics of birth attendants. They felt that these health care providers should have good skills as they are employed by hospitals. However when probed, they identified that an ideal birth attendant should have good midwifery skills including the ability to keep everything clean, not damage the vagina, not cause pain and encourage women to manage labour pain. They should also promote NVD but at the same time be able to identify women who need a CS. They thought that birth attendants should have a lot of experience and for many this meant that they should be older.

"The doctor would encourage my daughter and try her best to make sure she has a safe natural

delivery if possible. I don't know what to say about skills, except that she should be good at doing normal deliveries and be able to manage a CS only when it is necessary. The doctor should be gentle, careful and have received professional training." IDI5, M, CS, C, 56yrs.

"Having good skill means always practicing midwifery. She will have more pain if the doctors don't know well about that. But if we meet a green hand (i.e. a newly qualified doctor) we will have more pain since he knows nothing." IDI7, M, ND, C, 56yrs.

A few mothers said that when choosing the ideal attendant they did not consider their skills, but considered their own birth experiences or recommendations from others. A few mothers also identified that doctors should be able to: answer women's questions; deal with any problems; perform CS; and give oxytocin.

Qualifications

The majority of women and mothers said that they did not think about the qualifications of an ideal attendant. They considered experience as being more important than qualifications. They reported that hospitals would only employ staff who were able to do NVD and CS. When probed, many women said that attendants with qualifications from higher level institutions will be better, and therefore doctors instead of midwives should conduct the deliveries. They wanted a health care provider who has the skills to do both NVD and CS. However, a few women reported that as both doctors and midwives have to pass many examinations they must be good at doing deliveries. A few women also identified that midwives would be better at doing deliveries as they perceived them to be specialists in this area.

"An old doctor and one that you know would be better. The head of the department of Obstetrics and Gynecology would be best as they have more experience and are skilled. If the doctor is new, their courage and knowledge are not enough. Even when they are skilled, we are still not confident in them." PI2, M, ND, C, 60yrs.

"I hope they are doctors. I feel delivery by midwives is unsafe." IDI21, W, ND, T, 33yrs, Multi.

6.3 Experiences of care

6.3.1 Choice of place of delivery

Common reasons for women choosing to deliver in the township hospitals included: township hospitals were closer to home; township hospital doctors were good at doing NVD; women knew the doctor as had antenatal care or had delivered their first baby in the township hospital; and women

had wanted to go to the county hospital but as labour was so fast there was no time to travel there. A few women had different reasons for choosing the township hospital: the township hospital had good facilities; county hospital doctors were unfriendly; and an experienced doctor from the county hospital had come to work in the township hospital. When mothers were asked why women had chosen to deliver at the township hospitals, the common response was that as antenatal examinations showed that everything was normal there was no need to go to a higher level hospital.

"My mother in law said that the doctors here know a lot about how to look after women and their babies. During pregnancy this doctor always examined me. I won't worry if I deliver here. I have not been to the county hospital, but I heard that the attitudes of the staff are not good." IDI12, W, ND, T, 26ys, Primi.

Most women who chose the county hospitals for delivery reported that they had better environments and equipment than township hospitals, and doctors in county hospitals were more skilled. Their mothers gave similar views. A minority related this to age and said that when mothers are aged over 30 years, they should go to the county hospital as there is better equipment and the staff are more skilled. A few also said that the doctor providing antenatal care, recommended the doctors at the Traditional Chinese Medicine hospital. A few women said that as they attended the county hospital for antenatal examinations, they knew the doctors and preferred to deliver there. Some mothers also perceived that doctors in the Traditional Chinese Medicine hospital had a better attitude towards women.

"My mother in law said that we have had a baby already, and I was over 30 years old, in case of an emergency, we chose to go to the county as it has better equipment and skilled doctor." IDI5, W, ND, C, 33yrs, Multi.

6.3.2 Choice of type of delivery

The majority of women interviewed had a NVD. Women perceived that NVD was good for their own health: the stay in hospital was shorter; there was no scar; there were fewer complications; and the recovery was quicker. Some chose NVD as they had delivered their first baby normally and thought that they could deliver normally again. They also perceived that there was less pain with NVD. Some women thought that it helped promote the relationship between mother and baby.

A few women gave different reasons for choosing NVD. They perceived that as they were healthy and had no problems during pregnancy, then they would have a successful NVD. Other women related choice of NVD with the characteristics and outcomes for the baby: NVD was better for the baby; the drugs used in CS can harm the baby's intelligence; and the foetal position and size allowed

a NVD. Only women with difficult labours should have CS. Only a few women mentioned that the cost of CS was greater than NVD and this affected their choice of type of delivery.

"I got some information from a book to say normal delivery is good for uterus contraction. I chose a normal delivery. I was afraid about the operation. The doctor examined me and suggested to have CS, but I wanted to deliver normally." IDI17, W, ND, T, 24yrs, Primi.

Of the women who had a CS, several common reasons for their decision emerged: baby's position was abnormal; the umbilical cord was around the baby's neck; the baby was large; age of mother was over 30 years; and underweight women do not have enough strength for delivery. Others had a fear of labour and delivery pain and thought that CS was painless.

"I decided to have CS because the cord was around the baby's neck. We found it when the embryo is 7 to 8 months old. I prepared for normal delivery. But the doctors in Shanghai and Chinese Medical Hospital in our county all told me that the cord was around baby's neck, and it was 15 days after the due date." IDI7, W, CS, C, 27yrs, Primi.

"I wanted to give birth by myself at first, but I'm afraid of pain, and chose CS." IDI6, W, CS, C, 26yrs, Primi.

Other reasons for choosing CS were put forward by a minority of women. Tubal ligation can be performed at the same time as the CS. It was quick and convenient: the date and time of the operation can be planned whereas with a NVD women must go to the hospital and wait for the doctor to arrive.

The decision making process regarding choice of type of delivery appears to be complex. Some women appear to make the decision themselves based on their own knowledge and information seeking. For example, one woman reported that she knew from reading books that large babies need to be delivered by CS and as the ultrasound scan showed that her baby was big, she contacted the doctor to do a CS. Other women were advised by their doctors to have CS for medical reasons. However, some women said that although doctors suggested having CS because of complications with the baby such as prematurity and cord around the baby's neck, they felt that the doctors insisted in carrying out the operation as they wanted to earn more money. Other women followed the advice of family members or friends.

"The doctor said that you'd best to have a caesarean to avoid a difficult delivery because of insufficient fluid. But we felt it was the best to have an easy delivery. If there were some accidents we could select caesarean section at that time." PI2, M, ND, C, 60yrs.

"I did not discuss it with the doctor. I knew that I needed a caesarean section because I had read things and listened to other women talking. I have the telephone number of doctor who does C-section in Chinese traditional medicine hospital. I can call her or call 120. And also I can go to hospital by myself in advance." IDI3, W, CS, C, 24yrs, Primi.

6.3.3 Admission procedures

There were no differences in perceptions of women and mothers who delivered in township or county hospitals. Many women and mothers reported that family members had to register them in hospital before receiving any care. This included booking the bed, signing the consent form for staying in hospital, buying drugs and paying fees. Following this, many women had vaginal examinations, abdominal palpation, auscultation of foetal heart, blood and urine tests, electrocardiograms and ultrasound scans. They did not know why they had these tests. Most women, but few mothers reported giving "red packets" of money to doctors to receive good care.

A few women reported other experiences of registering: they booked the delivery bed in advance or called the doctors from home so that they would be at the hospital when they arrived; the doctor was a family friend and this made the admission procedure much easier as she did not have to wait to be registered before receiving care; the doctor who they had chosen to do the delivery was busy in the hospital, so they had to find another doctor to do the delivery.

A few women reported that they did not give "red packets" of money to doctors. Some perceived that they received poorer care because of not giving any "red packets", and in particular the attitudes of the staff were worse. A few mothers reported that they did give red packets to the doctors to make sure she had good care, and others were not aware whether this was done as the son managed all financial matters.

"Everyone gives doctor a red packet for security. There was a woman near my home who had a torn perineum because she gave the doctor the red packet later. So every woman gives the doctor a red packet when they go to hospital." IDI13, W, CS, T, 30yrs, Multi.

"W: We went to register when I first arrived at the hospital.
M: I took her to do ultrasound examination and it said the baby was normal and my daughter could have a normal delivery. Then we paid 2000 yuan for normal delivery.
W: She said that my baby would be born sometime in the evening.
X: How did you find the doctor when you went to the hospital?
W: At first, we phoned the doctor and asked for hospitalization. I stayed in the hospital ward and my mother went to make payment". PI3, W, M, ND, T, 28yrs, 57yrs, Primi.

Consent for hospitalisation and delivery

All women reported that there was a consent form to sign when they entered the hospital for delivery. Some women signed this document themselves, whereas in other situations their husbands signed the form. Most women did not know what was written on the paper and said that it was not explained, only that it was a hospital regulation. One woman reported that by signing the form, the family was taking responsibility should any accident occur. Women who received a CS said there was a separate consent form, in addition to the consent for care in hospital. The mothers did not know anything about the consent forms and said that this was the responsibility of their sons or husbands.

"I didn't sign it; my husband signed it. I asked my husband what is written on it later, and he did not know. I suppose he didn't read it, we had it when I was about to deliver. The doctor didn't explain." IDI31, W, ND, C, 35yrs, Multi.

"My husband signed it, not me, so I don't know what was on it. But I think it is about safety, and preventing accidents. My relatives are responsible for any accident because they agreed to sign it." IDI29, W, ND, T, 24yrs, Primi.

6.3.4 Choice about care

The majority of women and mothers reported that doctors asked women and their families what type of delivery they wanted and followed their wishes. However, doctors did not explain what care they were providing and were not given a choice about the care they received. Doctors did not ask permission to do any investigations, examinations, or other care such as episiotomy or shaving. As a result, they did not clearly understand what was happening. They wanted the doctors to explain everything clearly, so that they could understand what was happening and be less worried and frightened.

A few women who delivered in the township hospitals gave different views. Doctors asked permission to do examinations. Women can ask for care and the doctors agree, for example some women in the township and county hospitals asked for oxytocin infusion to help with labour pain and the doctors agreed to give this. The doctors did not give episiotomies or intravenous fluids on women's request.

Most mothers perceived that once you have gone into the hospital, then you must follow what the doctor says and cannot ask for different care. Doctors are professional and they know what is best for women. They are frequently supervised by the health care leaders in the county and so will not provide poor quality care. They appeared to be satisfied with this situation.

A few mothers said that doctors explained what they were doing, and asked permission to do investigations and examinations. A few mothers explained that they asked for CS during labour, but the doctors refused to do the operation and were angry at the suggestions.

"Doctors should seek the views of mothers for most things. But they normally do what they want to. I haven't the right to choose what care I receive." IDI1, W, ND, T, 24yrs, Multi.

"I think it's not necessary for me to have any choice, just trust the doctors. He would ask my permission when necessary. They needn't tell me what was happening because I know little about the care and I think what the doctors do would be right, they would try their best to make you feel better." IDI24, W, ND, T, 22yrs, Primi.

6.3.5 Hospital environment and equipment

Several themes about the environment emerged as follows: cleanliness, noise, toilets and bathrooms, lack of furniture and recommendations for improvements.

Women and mothers thought it was important that the hospital was clean. Most women who delivered in the county and township hospitals reported that the beds, sheets and quilts were dirty and so some brought their own from home. Those who delivered in the township hospitals thought that the floors, walls and curtains of the delivery room, labour room and ward were dirty. However, most women delivering in the county hospitals thought that the labour rooms, delivery rooms and wards were fairly clean. The majority of mothers thought the labour rooms, delivery rooms, wards, beds and quilts of both township and county hospitals were clean.

Many women reported that the delivery room and wards in both township and county hospitals were not quiet, with noise coming from the streets and corridors. They wanted the delivery room and wards to be quiet as then they could rest more easily. A few mothers said that the township hospitals were noisy.

Most women also said that the delivery rooms appeared bare, with only a bed and a few pieces of furniture. There were air conditioning units in most delivery rooms which were used to keep them warm in winter and cool in summer. Mothers said that there was little equipment in the delivery room: a bed, air conditioning machines, and lights.

Many reported that there were no toilets or bathrooms in the labour or delivery rooms in the county and township hospitals, and women found it difficult to walk to the toilet during labour so brought a pot from home. Half of the women thought the toilets were clean, whilst the remainder thought they were dirty.

A few women and mothers perceived that the delivery room in the township hospital cannot be compared with bigger hospitals and these poorer conditions were to be expected in a township. They perceived that as costs were cheaper at township level, then you pay for what you get. They also thought it was impossible for the hospital environment to be like those they see on television.

A few women recommended the following changes: each woman should have a room with their own toilet; a maximum of two women should be in each ward so that it is quieter and less crowded; the delivery room should be on the ground floor so that women do not have to climb steps in labour; the labour room, delivery room and ward should be more comfortable, relaxing and more like home; and there should be clean toilets.

"I felt it was cold, unwelcoming and uncomfortable. I think the colour of the delivery room should be warmer and the materials should be neat and clean. Also the ground should be clean. The whole environment made me feel uncomfortable." IDI12, W, ND, T, 26yrs, Primi.

"It is not clean. It should be. There were many mosquitoes. The hospital should know that infection can be caused by sanitation. The county hospital is better and other big hospitals are cleaner." FGD1, M, ND, T, 57yrs.

Equipment

The majority of women and mothers reported that there was little equipment in the delivery rooms and recommended that more should be available. However, when probed they were unable to describe the available equipment or what equipment was needed. They recognized that the equipment was not as good as in bigger hospitals.

"The delivery room is too empty. It should be made just like a home. More and better equipment. There was nothing except a bed. The space should be smaller." IDI6, W, CS, C, 26yrs, Primi.

Privacy

The majority of women and mothers were satisfied with the level of privacy provided in the hospitals. They said that apart from the hospital staff and relatives, no one was able to come into the labour and delivery rooms. Doors, windows and curtains of labour and delivery rooms were closed. In the county hospital there is a room assigned specially for examinations.

A few women said that privacy should be improved: the door to the delivery room should be closed; privacy should be protected even when women are in pain; and staff should knock before entering the delivery room.

A few mothers reported that the doctors used a sheet to cover the woman during delivery. For some women privacy was not seen as important as they were more concerned about having a safe delivery.

"When we delivered the baby, there was no screen. In the delivery room, the door and windows were usually closed. The doctors paid attention to closing the doors when they entered and left. Actually, when I delivered I didn't think that there should be any screens. Only relatives of the women are allowed to come in, no one else is allowed." FGD3, W, ND, T, 25yrs, Primi.

6.3.6 Skills of health care providers

Many women and mothers reported that the skills of doctors and nurses were good. However, many could not say clearly what they meant by good skills. Of the women who could describe good skills, they commonly said that the doctors were careful, gentle and quick in examinations, deliveries and suturing. The nurses were good at giving intravenous fluids and sterilisation of room and equipment.

A few women had other descriptions of good skills. They included: doctor assessed bleeding very frequently; the doctor did examinations well; the doctor did not hurry and controlled everything; and nurses did injections carefully and caused little pain. A few women thought the skills were poor and needed to be improved: the doctor allowed the perineum to tear badly and this was very painful; doctors could not manage the umbilical cord after delivery and had to wait for other doctors; doctors did not attend to the woman after the delivery; and having one doctor in the delivery room was perceived as unsafe as one doctor cannot manage emergencies alone.

A few mothers explained good skills as: doctors gave oxygen to the baby; doctors wore gloves for delivery; doctors were very quick and gentle; and doctors managed the intravenous fluids. A few mothers thought that the doctors did not have good skills and this was explained as the doctor did not pay much attention to the woman; the doctor was alone in the delivery room and so could not manage any emergencies.

"An intern inserted the catheter and it was so painful. But when I asked for an old nurse to do it for me, there was less pain. There are many inexperienced doctors." FGD2, W, CS, C, 24yrs, Primi.

"I felt all skills were good. For example, it was good when they were suturing me. Their actions were light and soft." IDI23, W, ND, T, 25yrs, Primi.

"She worked very quickly and she was experienced. After delivery, she also asked the situation of me and my baby. I had a lot of bleeding after delivery and she saw me several times in case of postnatal haemorrhage. And also she advised on caring for the baby." FGD3, W, ND, T, 25yrs, Primi.

6.3.7 Support during labour and delivery

Support from family

The majority of women and their mothers who had NVDs in township hospitals reported that relatives were allowed into the labour and delivery room. A combination of mothers, mothers in law, sisters and husbands stayed with the women during delivery. They gave encouragement, held her hands, encouraged with pushing, wiped sweat from the face and talked with her to distract from the pain. Women said that they felt braver and more able to manage the pain with relatives present. They said it was useful to have family there so that they could tell the doctor if she was doing something wrong. Most mothers perceived that women felt better for this care.

Half of women who had NVDs in the county hospitals reported that they were allowed to have female relatives accompany them in delivery. They wanted their family to be present to help them manage the delivery. In the township and county hospitals, no families were allowed into the operating room during the CS. Women wanted to be accompanied by their families as they felt afraid and anxious.

"My mother and my husband were there from the labour until I delivered the baby. They touched me when I had serious pain. I could bear the pain when my husband and mother were with me, otherwise I cannot." IDI12, W, ND, T, 26yrs, Primi.

A few women had other experiences about companionship during labour. Their mothers were not useful in the delivery room as they just stood there and did nothing. Women did not want to be accompanied by relatives as they felt embarrassed by delivery and the pain.

A few mothers said that they were not allowed to enter the delivery room of the county hospitals as other women were delivering at the same time. They felt useless and stood in the delivery room without being allowed to move, saying very little to the women. They found it difficult as they were unable to relieve the labour pain.

Support from health care providers

The majority of women who had NVDs in the township hospitals and their mothers reported that they received support from the doctors. They said that the doctors talked to them: they said not to be frightened or worried; they talked about other things to distract the women from labour pain; and encouraged them by saying they would be mothers. Doctors also helped them to manage the pain by teaching them how to breathe deeply and massaging the abdomen and back.

"The doctor said not to hurry, it must hurt when you deliver. It was painful, and she chatted with me. She said that it must hurt. I said it was very painful. She always comforted me. It's enough." IDI26, W, ND, T, 37yrs, Multi.

On the other hand, most women and mothers who delivered in the county hospitals by NVD or CS reported a different situation. They said that they received little if any support from doctors or nurses. The staff did not spend any time to comfort or encourage them, but told them not to cry out in pain as this upset other women. Doctors wanted women to deliver quickly, and if they did not, then they blamed them for being slow. One mother reported that the doctor slapped the woman because she was delivering too slowly and other women were waiting to deliver. The nurses were unfriendly, did not care for women or speak with them and only gave intravenous fluids. Women wanted support as they were frightened, in pain and did not know what was happening. They wanted the doctors or nurses to stay with them during the entire labour and delivery.

"Doctors pay less attention to you in the county hospitals at the busy time. If it is a normal delivery, during labor time, doctors will not always stay with us, she may do some other things and observe us occasionally. She just does the delivery after lying on the delivery bed." FGD2, W, ND, C, 25yrs, Primi.

A few women who delivered in the township hospitals and their mothers reported other experiences. The doctors or nurses didn't provide any support: the doctors did not care about them and did not talk to them and this made them frightened; the nurses were too busy to do anything to help; and women with first deliveries needed more support from doctors. Women felt that they needed to meet the doctor before the delivery as this made women more relaxed and safer. One woman explained that it was up to women to deliver and manage labour so support from doctors was not necessary. One mother explained that they could not expect to have more support and attention as they paid very little in the township hospital.

A minority of women who had NVDs in the county hospitals and their mothers said that the doctors comforted them when they were in pain and encouraged them to push. Some women received intravenous fluids and oxygen which they perceived as signs of support from doctors.

"She kept silent when she was in pain. The doctor said if you feel pain you can cry out as you want, and told her not to be ashamed of that. En, the doctor comforted her. The two doctors were present all the time. I think it's good." IDI9, M, ND, T, 51yrs.

"The doctor was very busy, and didn't do anything. She was busy with other babies, and had no time to help my daughter-in-law." PI4, M, ND, C, 53yrs.

6.3.8 1st stage of labour

Pubic shaving

The majority of women and mothers reported that they did not have pubic shaving when they had a NVD. They thought that it was not necessary for NVD and had heard that it was painful and embarrassing. Another woman said that some shaving should be done as it makes it cleaner and so that the baby is not in contact with bacteria. A few mothers said that their daughters were shaved, but they did not want this to happen and did not understand why this was done.

"I think it's necessary for CS but not for normal delivery. Why? Women need sterilization to do CS, if the pubic hair goes into the scar, it is not good." IDI20, W, ND, C, 30yrs, Multi.

"Participant 2: I think that some shaving should be done, so that the baby cannot be in contact with bacteria. Shaving will make it cleaner.
Participant 5: I don't think there is a need for shaving.
Participant 1: if the doctors say that it is good for shaving, I will follow her.
Participant 3: If the doctor says that there must be shaving and it is good for the baby, then I will be shaved." FGD3 W; 1: ND, C, 26 yrs, Primi; 2: ND, T, 35yrs, Multi; 3: ND, C, 29yrs, Primi; 5: ND, T, 24yrs, Primi.

Vaginal examinations

The majority of women with NVD reported that they had vaginal examinations during labour. Although they perceived that vaginal examinations were necessary to identify the degree of cervical dilation, they did not want to have them. However they felt that they must follow the doctor's instructions. They reported that vaginal examinations were uncomfortable and embarrassing. The number of vaginal examinations varied: from one examination to one every half an hour in labour.

"The doctor examined several times. It is necessary to be checked to see if the delivery will be soon. I'd like to have them, or how do you know when the baby will be born? It was painful, anyway, it was unavoidable." PI6, W, ND, T, 27yrs, Primi.

A few women reported that women should have few vaginal examinations, as they are very painful and can cause problems such as infection. Some women ask for frequent vaginal examinations and the doctor must refuse to do them.

Most mothers reported that their daughters had vaginal examinations during labour. Most wanted these examinations to be done to find out the position of the baby or the progress of labour. A few

mothers said that they felt reassured when women had these examinations. One mother explained that the doctor corrected the foetal position when doing the vaginal examination.

Rectal examinations

Most women and mothers reported that they did not have rectal examinations in labour. They thought it was not necessary. However there were some reports that rectal examinations were being performed. Women who delivered in one township hospital and one county hospital reported having rectal examinations in labour to assess the dilatation of the cervix. They reported that it was very uncomfortable and preferred not to have this examination but felt they had no choice. Other women reported having rectal examinations in pregnancy or after delivery but without knowing the reasons for these examinations. One woman explained that the doctor had informed her that rectal examinations were not necessary unless the woman has a vaginal infection.

A few mothers did not know whether their daughters had rectal examinations. A few said that their daughters did have rectal examinations to assess progress of labour.

"When I came to the hospital I had a rectal examination. It is better not to have. It was uncomfortable." IDI17, W, ND, T, 24yrs, Primi.

Receiving an enema

The majority of women reported that they did not have an enema during labour. Most had not heard of women being given enemas in labour. They did not think it was necessary, as they had passed stool naturally, or ate little in labour. A few women did not know if they had an enema. One woman said she had an enema after delivery as she had problems passing stool. Another woman said that she had an enema with her first delivery several years ago.

The majority of mothers reported that their daughters did not have enemas. However they also said that they would agree with the doctor if he suggested this. One mother believed that it would be better if a woman does pass stool before delivery so that stool does not contaminate the baby.

Mobilisation during labour

The majority of women and mothers reported that women walked in the labour room and along the corridor in the early stage of labour. In the later stage of labour, after the cervix had dilated 5 cm or more, the doctor asked them to lie on the delivery bed. Most were advised by the doctors to walk as it would speed up labour, make delivery easier and help the baby move into a favourable position. However, some found it too painful to walk and so walked a little and then rested on the bed.

A few women had different experiences of mobility in labour. The doctors did not say anything about mobilizing, but they just mobilized as it helped with the pain. The doctors asked them to lie on the bed because the membranes had ruptured. Others were too afraid to move because they were in too much pain. Mothers also knew from their own experiences that being active would help with labour. A few mothers said that their daughters did not mobilize because they felt too heavy and were in too much pain.

"The doctor said it was good for the baby when I move around. She said it was good for the foetal position. If I was sitting, the baby would curl in my uterus. I moved here and there, and sometimes had a rest when I was tried. Anyway, I had a walk when I was not painful and the time was not long. I just took a walk by the side of the hospital. It was helpful. I felt the time I delivered was shorter, and the pressure was not heavy". IDI23, W, ND, T, 25yrs, Primi.

"When I came into the delivery room, my cervix had dilated to 5cm and the doctor asked me to stay in the delivery bed, and no mobilization". FGD3, W, ND, T, 35yrs, Multi.

Pain relief and management

Almost all women who had NVD and their mothers reported that they did not have any drugs to relieve labour pain. The majority of women and mothers perceived that pain was natural, unavoidable and had to be endured. Despite this belief, most women wanted to relieve the pain. Women and mothers had various views on drugs for pain relief: there are no drugs or methods to relieve labour pain; pain relief drugs are not safe for the mother; pain relief drugs can harm the baby; and they did not know of any drugs that could be used for pain relief. Many women had oxytocin infusions to speed up labour and this was seen as a way to relieve pain. Many women reported that family support and massage helped with the pain. Most mothers said that the doctors talked with the women to help her relax and distract her from the pain.

However a few women had differing views and behaviours. Some women requested CS because of the severe labour pain or oxytocin infusion to speed up the labour and so relieve the pain, but the doctors refused to do these interventions. Other women reported that the doctors talked with them and massaged their abdomen or back and this support helped with the pain. A few women said that the doctors did not help with the pain in any way. Two women said that they received painkillers and IV fluids.

The minority of mothers had different reports: the woman took a tablet to help relieve the pain; she suggested to the doctor to do a CS as her daughter could not bear the pain but the doctor blamed the woman for delivering slowly and slapped her across the face; and the doctor offered pain relief

but the mother and woman refused to take it.

"I followed the doctor's advice, deep breathing. Of course I wanted pain relief, but I can bear it. Drugs are impossible. So I hoped the doctor could help me alleviate pain by words. Drugs are not safe." IDI13, W, CS, T, 30yrs, Multi.

"I wanted pain relief but I think there were no medications and other methods to relieve pain in this hospital. I don't know if it's the same in other hospitals." IDI24, W, ND, T, 22yrs, Primi.

"The doctor said pain relief was not good for the baby and asked me to bear the pain. Unlike you from urban areas, we don't know this. I was in pain and crying." IDI26, W, ND, T, 37yrs, Multi.

"She can't have injections to relieve pain during delivery because they can only give injections to hasten child delivery. Pain-relief injection can't be taken in our village's old custom. If you can't feel pain then the baby can't be delivered. How can a woman deliver without pain? You have to feel pain during delivery. Pain relief is forbidden in delivery." IDI7, M, ND, C, 60yrs.

Intravenous fluids

The majority of women who had NVD and mothers reported that they had IV fluids during labour and after delivery or after delivery only. Women who had IV fluids during labour perceived that they were to speed up labour and provide energy as they had not eaten any food. Women who had IV fluids after delivery said that these were to prevent infection and stop bleeding. Some women did not know why the IV fluids were given.

Most mothers did not know what the fluids were and thought they must be necessary because the doctors had prescribed them. A few mothers said that they did not want the IV fluids as they were not good for women.

"I had some after delivery. I don't know why some people had some, while some others didn't have. Maybe the wound in my vagina was a little serious, so I had to have some. They told me those are antibiotics. I didn't want them, because it made me feel bad emotionally. Before delivery, the doctors told me I could check out if my baby and I was both OK, because I chose a normal delivery, but I stayed at the hospital for 2 or 3 days. I felt uncomfortable. I don't know why I had IV fluids. The doctor said I had episiotomy and needed to antibiotics." IDI24, W, ND, T, 22yrs, Primi.

Use of oxytocin infusion in labour

Over half of women with NVD had an intravenous infusion of oxytocin during labour. Most women were happy to follow the doctors' instructions about having oxytocin. Others asked for the oxytocin

infusion to be administered. They perceived that oxytocin can speed up labour and delivery and can therefore relieve pain by shortening labour.

"The doctor gave an infusion of oxytocin and said that this would reduce the pain and make me deliver more quickly." PI6, W, ND, T, 27yrs, Primi.

A few women gave other experiences of and reasons for IV infusions of oxytocin. Some did not know why they received these infusions. Doctors recommended oxytocin infusions to prevent complications from having large babies and to produce regular and frequent contractions. One woman, who had delivered her first baby without any infusions, did not want the oxytocin infusion as she thought it was not necessary. However, the doctor still gave the infusion.

Most mothers did not know if their daughters had received oxytocin infusion. However a few described the experiences of oxytocin infusions. The doctor gave oxytocin so that the baby is born quickly and easily and makes the woman more comfortable. The doctor gave oxytocin because of a lack of amniotic fluid and to speed up labour and reduce pain.

"The doctor injected oxytocin after considering my situation. He said my baby was too big to deliver and gave the injection. It was painful for a long time, and after injection of oxytocin I gave birth. I didn't get anything else. I guess there is no perfect effect if I use other medicines. Usually people just inject a little oxytocin." IDI15, W, ND, T, 29yrs, Multi.

"Doctor said not to give me oxytocin because it was not good for baby. She asked me to bear the pain. I asked whether I could have CS if I could not have normal delivery. She just let me wait and see and helped me push. I didn't feel good because I could only lie there." IDI26, W, ND, T, 37yrs, Multi.

Food and drink during labour

Most women reported that they did not want to eat anything during labour because of the pain. A few women said that they drank only water as other women had said that eating food will cause vomiting.

Most mothers were not certain whether their daughters had eaten during labour. One mother commented that her daughter had eaten at home when she was in early labour and did not want anything else. Another mother said she gave some food and drinks to her daughter.

"I did not want to eat at all. Someone told me that when woman are going to deliver, she has no appetite or even will vomit after eating. So it is better to only drink some water." IDI15, W, ND, T, 29yrs, Multi.

"The book told us that woman should eat some food before childbirth, so I ate something." IDI22, W, ND, T, 23yrs, Primi.

6.3.9 2nd stage of labour

Episiotomy

The majority of women who had NVD in the township and county hospitals said that they received episiotomies but did not want them. Doctors had advised them that it would be difficult for the baby to be born without an episiotomy, the baby was too big, and it would be safer for the baby. They felt that the doctor knew what was best for them and trusted their judgement. The majority of mothers expressed similar views.

Some women gave different reasons for the episiotomy: the doctors had said that a laceration was more painful and more difficult to heal; and the baby was small so an episiotomy would speed up the delivery. A few perceived that all women who have a NVD have an episiotomy.

Almost all women with episiotomies talked about them being painful. Some talked of the pain of the actual incision. However, the majority recalled the suturing as being very painful. They did not receive any local anaesthetic for either the incision or suturing. They had a lot of pain for many days following the delivery and this made it difficult for them to sit, walk around and pass urine. Of the women who did not receive an episiotomy, most said that they did not want an episiotomy and that it was not necessary. They thought it was not good for their bodies; it was more painful than a natural tear; and took a long time to heal. One woman asked for drugs to prevent pain from suturing, but the doctor refused as it would affect the healing of the wound.

Most mothers had not thought of the pain of the episiotomy and suturing. However, a few mothers thought it was better for the women not to have an episiotomy, as it was painful and difficult to heal. One mother said that they tried to refuse to have an episiotomy but the doctor said she would blame them if anything went wrong, and so they agreed to the episiotomy.

"I was going to ask doctor to cut and she happened to suggest the same thing, so I definitely agreed. Because I could not push, every time when the baby was nearly going out, it went back again. But I don't like it, it is better to keep it intact. It is ok at that time, and later I have some pain." IDI25, W, ND, T, 25yrs, Primi.

"I was afraid of it. There was a lot of pain having three stitches without anaesthetic. It was much more serious than delivery itself. They said it is good for the baby. Someone said the baby's head would be crushed and look horrible without episiotomy. I don't know. The doctors also said baby's

head must be crushed through normal delivery." IDI20, W, ND, C, 30yrs, Multi.

"The doctor said that if I didn't have an episiotomy I would feel more pain when I tore. The tear is difficult to heal. I didn't want an episiotomy, I told the doctor that if you want to give me an episiotomy, it is better not to tell me, and just do the cut. The doctor said that she must tell me. Later I asked the doctor for some local anaesthetic for the episiotomy, but she refused and said that it may affect the healing of the wound. She did the episiotomy when I had a very strong stomach pain." FGD3, W, ND, C, 29yrs, Primi.

Position for delivery

Just over half of women reported that they lay down on their backs with their legs apart on the delivery bed. The remainder lay on their backs with feet up on poles or shelves on the delivery bed. They perceived that these were the normal positions for delivery and did not know of any other positions for delivery. They followed the doctors' advice that these supine positions were better for pushing and would speed up delivery. However many women felt uncomfortable in these positions. The majority of mothers had similar views.

Some women had different views: lying down for delivery was comfortable; some mothers wanted to try other positions for delivery but were not allowed; the delivery bed was too narrow and high and hand rails should be available to make it more comfortable; and delivery in lying position was not as fast as delivering in squatting position.

Some mothers gave other views: it was impossible to deliver lying on the side as the baby cannot come out; it was safer to deliver lying on your back because blood can drain away instead of staying in the abdomen; and handles on the delivery beds would help women push more effectively.

"Just lay on the bed with my legs on the shelves on two sides. It is convenient for the doctor with the lights on. I couldn't have another position. It was OK. I must do that. The doctor would not allow me to change position. It isn't convenient for her." IDI20, W, ND, C, 30yrs, Multi.

"They encouraged me and let me fix my legs in a certain position and didn't allow me to lie on my side, so I had to lie on my back. They didn't approve of lying on my side. My legs were fixed by two persons, you see, I was forced to. It made me feel very painful. If I had a choice, I would like to move as I like." IDI24, W, ND, T, 22yrs, Primi.

Fundal pressure during delivery

The majority of women and mothers reported that fundal pressure was applied during labour. They

explained that the doctors or nurses pressed on the top of the abdomen to help push the baby out more quickly. Some doctors stood on a stool in order to apply more pressure. Women said the pain was unbearable.

"The doctor pressed on my belly when the baby was coming out. I didn't know the place precisely, since the pain was overwhelming." IDI23, W, ND, T, 25yrs, Primi.

"If the nurse had not pressed on my daughter-in-law's abdomen, she wouldn't give birth to the baby. Only when the nurse stood on a high stool and pressed the abdomen did our baby's head appear." IDI4, M, ND, C, 54yrs.

6.3.10 3rd stage of labour

The majority of women were unable to explain what happened in the third stage of labour. They were so relieved that the baby was delivered that they did not notice what happened with the placenta.

6.3.11 Immediate care post delivery

Almost all women with NVD and their mothers reported that antibiotics were given after their delivery. Antibiotics were given to help with healing of the tear or episiotomy. They prevented infection and inflammation and were good for women. Most had oral antibiotics and a liquid or powder to clean the tears and episiotomies. However, some women and mothers reported that they had IV antibiotics after delivery. A few women said that they did not have antibiotics and perceived that they were not necessary as they had a NVD with no tear or episiotomy.

"I take IV fluids with cefradine. It is a must for prevention of infection. People have IV fluids after they give birth." IDI26, W, ND, T, 37yrs, Multi.

Most mothers said that doctors did not explain how and why to use the drugs. Other experiences of antibiotic use after delivery were: antibiotics were necessary for all women, but especially when the weather was hot; blood tests showed that women need IV antibiotics; if women deliver quickly, then there is no need to give antibiotics.

Many women and mothers reported that doctors gave little attention to women after the delivery. The families were expected to care for the new mother and baby. They wanted the doctors to actively take care of women by visiting them regularly and not just waiting for women to call for help; the baby should be examined and bathed daily; doctors should give women their telephone numbers so that women can call when they need assistance. Many women also reported that they

wanted to learn how to care for and feed their baby.

"We could go home after the delivery, but the doctor said that we should stay in the hospital for 24 hours. She was concerned about the baby and mother. The service was good. And the doctor came to visit the baby and the mother. The baby was born in the morning, and they washed him in the afternoon." IDI11, M, ND, T, 58yrs.

6.3.12 Caesarean section

Consent for CS

The majority of women reported that their husbands signed the consent form for the CS. They did not know what was on the form and the doctors did not explain. A few women said that they signed the consent form, along with their husband and the doctor before the operation. Although they understood that it was about the CS, they did not know any other details. Others thought that by signing the form they understood that there were risks in doing the CS and that the hospital would not take any responsibility if there were any complications. They thought that these forms would protect the doctor from any legal or financial action.

Most mothers did not know anything about the consent forms. They said that this was done by their son or son-in-law. However some thought that they had to sign the consent forms and that their purpose was to protect the doctors and hospitals from any disputes if medical complications occurred.

"You must sign when you enter the hospital. I didn't read it. My husband read it. They were afraid of danger during CS. It will protect the doctor. There would be no dispute between doctor and patient if we sign informed consent." PI7, W, CS, T, 27yrs, Primi.

Preparation for CS

Most women and mothers said that little or no explanation about the CS process was given by the doctors. All women had a spinal anaesthetic and some understood that this was safer for the baby. They thought that the anaesthetic was good as they did not feel any pain during the operation. Some said that the doctor tested if the anaesthetic was working by putting a needle on the skin before starting the operation. All women were shaved before the operation. Most thought that this was necessary as it helped prevent infection. However, one woman thought that the procedure was painful and that the hair growing back was even more painful. All women said that the doctors cleaned the abdominal area with disinfectant fluid. All women had a urinary catheter inserted on the ward before the operation and this remained until 3 or 4 days after delivery. They felt that this was

necessary as they did not need to get up to urinate after delivery. All women had intravenous fluids before the operation. Some women discussed the type of incision with the doctor. Whilst some women were advised to have vertical incisions because it was safer for subsequent pregnancies, only a few were advised to have transverse incisions. One woman was told that because she was so thin the transverse incision would not heal. Another woman had a transverse incision as the doctor said that there is less pain compared with the vertical scar.

"I chose transverse incision. Because many people have transverse incision, but the doctor said vertical incision was good for laboring again. But many people have transverse incision, and the scar is hardly seen." IDI27, W, CS, T, 26yrs, Multi.

Care during CS

Most women reported that they felt no pain during CS as they had spinal anaesthetic. However one woman said that she did feel pain, and so the doctor gave her an injection and she went to sleep. Most women reported that the doctor took the blood pressure several times during the operation. Some women said that the doctors talked to them kindly to distract them from the operation. However, others explained that the doctors chatted with the nurses throughout the operation and paid no attention to the women; and the operation was painful as doctors did not wait for the anaesthetic to work.

"The doctor and the nurse's skills are not bad. The operation is well done. Firstly, the doctor gave me anaesthesia, then, they comforted me. The doctor didn't operate until I was totally anaesthetised. I can accept it. They distracted me during anaesthesia, they didn't let me think about it. They worried that I would be nervous, so they talked to me." PI9, W, CS, C, 31yrs, Multi.

Care after CS

All women said that they had pain after the CS. Half of women reported receiving effective pain relief through an analgesia pump. However the other half of women said that they did not receive any pain relief because it would affect the production of breast milk and the drugs would pass to the baby. All women received antibiotics following CS.

"They let me use the analgesia pump which can be used for relieve pain. I feel it is good. It doesn't hurt after I use it." PI9, W, CS, C, 31 yrs, Multi.

"No pain relief. If pain relief is given then there will not be any breast milk. The doctor said that after anaesthesia you will definitely hurt, but you cannot take medicine and injection, because this will go to the child through the milk. It would be fine two days later". PI8, W, CS, T, 31yrs, Primi.

Most women and mothers said that they received no help with breastfeeding. They said that they had no milk for the first three days so the baby received milk powder. A few women reported that doctors gave information about breastfeeding and sometimes helped them with positions for breastfeeding. All women reported that they stayed in bed for 4 days. The family helped them wash and be comfortable. The urinary catheter was removed on the fourth day and then the women were allowed to get out of bed and walk with the help of their family.

"They didn't help her with the baby and breastfeeding. They didn't help her with moving or washing. Our family members were there, we were OK to do such things ourselves." IDI14, M, CS, T, 57yrs.

6.4 Conclusion

In table 6.2, the majority views of women and mothers about the ideal delivery and birth attendant are compared with the majority of women's and mother's actual experiences.

Table 6.2 Summary of ideal delivery and actual experiences

Ideal delivery and Ideal birth attendant	Actual experiences
NVD (women and mothers): • Quicker recovery • Less pain following NVD • Improves immunity and intelligence of baby	NVD (women and mothers): • Stay in hospital is shorter than for CS • Fewer complications and quicker recovery • First baby was NVD • Less pain with NVD
In hospital; county or higher level hospital (women): • Comfortable, clean and quiet environment • Good equipment • Skilled providers who can manage emergencies In hospital; township hospital (mothers): • Township hospitals can manage NVDs • Other hospitals are too expensive and far from home	Majority delivered in township hospitals • Close to home (women) • Doctors are good at NVDs (women) • Knew doctors because of previous delivery or antenatal care (women) • Antenatal examinations showed normal pregnancy therefore no need to go to higher level hospital (mothers)
Husband and other relatives present for labour and delivery (women and mothers): • Provide support and encouragement • If problems arise, better if family present	Township hospitals: all women were allowed to have relatives present for NVD (women and mothers) County hospitals: only half of women had relatives present (women and mothers)
Quiet and clean environment with own room (women) Clean and tidy environment – cannot expect more (mothers)	Township hospitals: • Delivery rooms, wards, beds and bed linen were dirty; a lot of noise from streets and corridors; shared room and toilets (women) • Delivery rooms, wards, beds and bed linen were clean; a lot of noise from streets and corridors (mothers) County hospitals: • Labour and delivery rooms and wards were

	clean; beds and bed linen were dirty; a lot of noise from streets and corridors; shared room and toilets (women) • Labour and delivery rooms, wards, beds and bed linen were clean; quiet (mothers)
Pain relief which is safe for mother and baby (women) Pain is natural and should be endured (mothers)	Almost all women having NVD did not receive pain relief (women and mothers)
Good skills (women and mothers): • Older and experienced • Good midwifery skills: cause little pain; care for mother and baby after delivery • Promote NVD: confident; good at watching progress • Act responsibly	Majority viewed skills as being good (women and mothers) • Careful, gentle and quick at doing examinations, deliveries and suturing (women and mothers) • Putting up IV fluids (women and mothers) • Sterilisation of delivery room and equipment (women) • Wore gloves for delivery (mothers)
Someone able to comfort and relieve pain (women and mothers)	• Township hospitals: most received support from doctors – talked to distract from pain; massaged back; taught to breathe deeply. Did not stay with women throughout labour and delivery (women and mothers). • County hospitals: most received little / no support from doctors and nurses; unfriendly; did not encourage; wanted them to deliver quickly (women and mothers).
Treat with respect (women and mothers): • Asking for consent • Explanation and discussion about care • Ensure there is some privacy for delivery and examinations	• Signing consent forms for admission and delivery compulsory (women and mothers); signed by mothers or their husbands without understanding what was on the consent form and the implications (women and mothers). • Doctors did not explain what care they were providing; mothers did not understand about the care; no choice about care they would receive; doctors did not ask permission for investigations, examinations or other care such as episiotomy (women); must follow doctors instructions and cannot ask for care (mothers). • Majority were satisfied with level of privacy: apart from hospital staff and relatives, no one came into the labour and delivery rooms; doors, windows and curtains of labour and delivery rooms were closed (women and mothers).

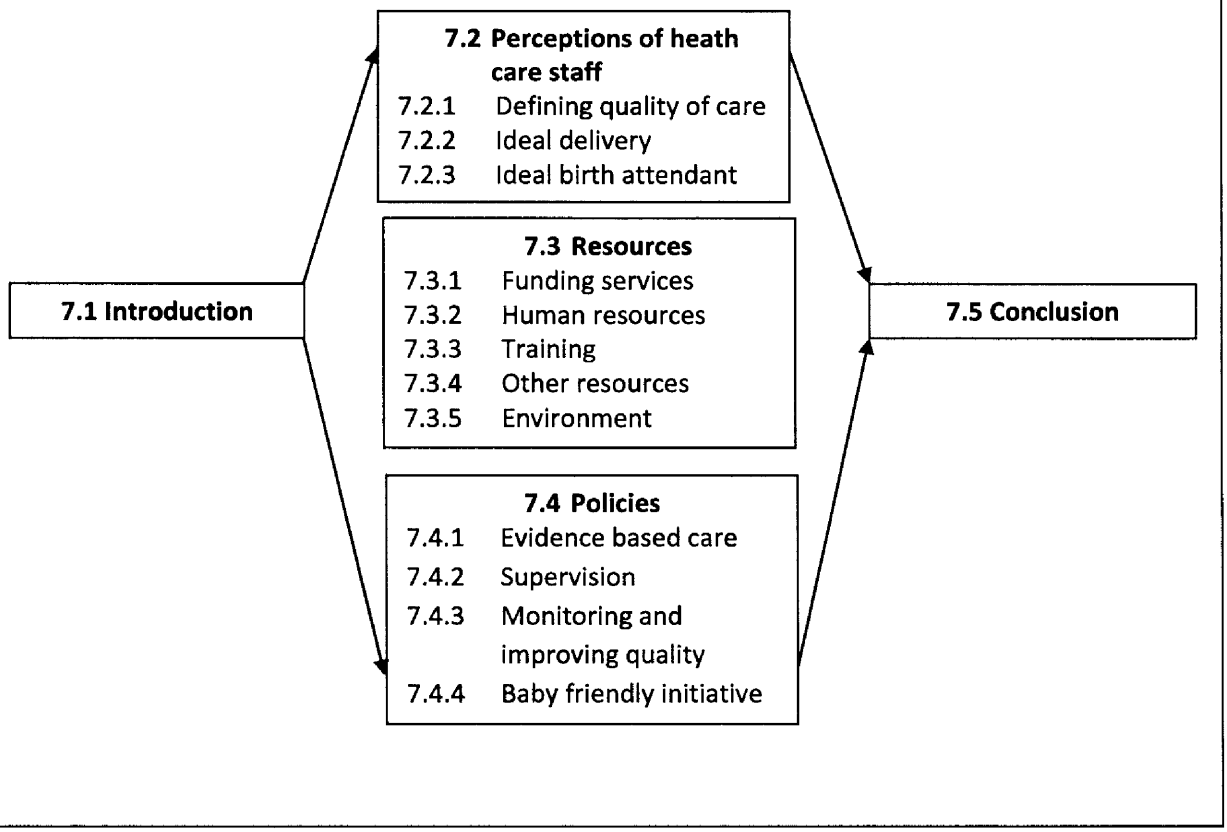
Key: (women) = women's views; (mother) = mother's views; (women and mothers) = both women and mothers shared the same views

Chapter 7: Factors Affecting Quality of Care

7.1 Introduction

This chapter focuses on the factors affecting quality of care in the study county using data from interviews with health care staff including providers, managers, key informants and review of documents. Firstly, health care staff's perceptions of quality of care will be explored. This will be followed by a section on resources including the funding of services; recruitment, retention, payment and training of the workforce; supply of equipment and drugs; and the environment of the facilities. Finally, the chapter looks at the policies in place within the county including: evidence based care and use of guidelines; supervision; monitoring and improving quality of care; and the Baby Friendly Initiative.

Figure 7.1: Overview of chapter



7.2 Health care staff's perceptions of quality of care

In this section, health care staff's definitions of quality of care, their views on the ideal delivery and birth attendant are explored.

7.2.1 Defining quality of care

The majority of health care providers and managers thought that assuring the safety of mother and baby is the most important aspect to quality of care. A successful delivery is when both mother and baby are well and there are no or few maternal and neonatal deaths and complications. Most health care providers and managers also identified that attitudes of doctors and other staff are also important. Staff should be able to communicate with women, comfort and relieve anxiety and fear and help women manage labour pain. They thought that if the relationships between doctors and patients are good, then the quality of care will be good. Careful and earnest attitude will promote good relationships. Most health care providers and managers perceived that the numbers, skills and qualifications of the staff are important in quality of care. They need to receive regular training; acquire new knowledge; and give care according to laws and guidelines. They should examine women carefully in antenatal, labour and postnatal periods and be able to identify high risk women. Many health care providers and managers also recognized that equipment is essential in providing good quality care. More sophisticated equipment, such as foetal heart monitor, is necessary. Most health care providers also recognized that the environment should be clean.

"In my opinion quality of delivery service should ensure security, which means guaranteeing the safety of both women and children." IDI3, Dr, T, F, 40 years.

"The attitude should be good. Teach the patient how to deliver correctly. Release the mental stress of the patients. Doctors should receive regular training. Doctors can deal with complications. The equipment and environment should be improved. We should recognise sick babies and keep babies warm." IDI4, Dr, T, F, 27 years.

"I think good attitude is most important. And then doctors must give women mental care, comfort them and get them emotionally ready for delivery. Then the correct delivery including antiseptic technique and visiting after delivery. I think health of the mother and infant is the most important." IDI9, Dr, C, F, 42years.

There were other views from a minority of managers and health care providers. Doctors need to be able to evaluate the care they provide as well as their attitude towards their work; doctors should be satisfied with the care they provide; and management within hospitals should include assessment

and improvement of quality of care. Maternity services should be affordable and easily accessible. Township hospitals are close to women's homes, are easily accessible, have lower fees than higher level hospitals and can therefore provide services for many women. Staff should be able to manage emergencies for women and babies, identify complications early and then manage them well. Drugs for delivery should be prepared in advance and records are completed according to standards.

One key informant divided quality of care into two aspects: environment for delivery; and skills and attitude of staff. He perceived that the number of staff, their skills and how they are paid affect the quality of care they provide. Another key informant explained that ensuring the safety of mother and baby is the most important aspect of quality of care. The only way to evaluate quality of care is by the numbers of maternal and infant deaths and complications. Good quality care can prevent deaths, and skills of doctors are important in providing good quality care. He perceived that a successful delivery is when a woman receives a package of care including antenatal, delivery and postnatal care.

"I think we should improve our consciousness of quality of care. It is convenient for women to deliver in township facilities. The services are cheap and the attitude is good. Their services can reach lots of people. So, women in labor don't have to give childbirth in big hospitals and it is alright for them to deliver in township hospitals". IDI5, MCH, T, F, 36 years.

"So for us doctors, if the labor is successful and the mother and baby are safe we are satisfied with the quality of childbirth care. But on the other hand, we must think about what women want." IDI5, Man, C, F, 41 years.

"Comfort is very important to women. For example, when you look for accommodation, you select the standard rooms of a hotel not the small inn. Similarly, the environment of labor room, delivery room and the hospital is very important to women." IDI8, Man, T, M, 38 years.

"As to the quality of delivery care, it is key that it should be systematic care including antenatal, delivery and postnatal care. Complete, systematic and safe delivery without any complications is a really successful delivery. We can only evaluate that by the number of complications that happen." KII2, M, 57years.

Table 7.1: Summary of majority views on defining quality of care

Health care providers	Managers	Key informants
• Assure safety of mother and baby	• Assure safety of mother and baby	• Assure safety of mother and baby – prevent deaths
• Able to communicate well - comfort and relieve anxiety and fear	• Able to communicate well – show that they care; reassure women about safety	• Attitude of staff
• Able to help manage labour pain	• Good skills of providers	• Skills of staff
• Able to observe labour and delivery	• Able to identify high risk women	• Enough staff to provide care
• Give care according to laws and guidelines	• Provide care according to guidelines	• Package of antenatal, delivery and postnatal care
• Equipment – more sophisticated such as CTG	• Have necessary equipment for delivery	
• Environment should be clean and good		

7.2.2 Ideal delivery

Type of delivery

The majority of health care providers and managers perceived that the ideal way to deliver is by NVD. However most health care providers also said that safety of mother and baby should be taken into account in choosing type of delivery. Managers also recognised that each situation should be assessed and the views of doctors and women should be considered. Health care providers' common reasons for NVD being ideal included: less pain with NVD; wound healing is slower in CS; village women often have 2 children; there are fewer complications with NVD; and it is better for breastfeeding.

A minority also recognised that in all hospitals, there is a fear of medical disputes, so if women or their families request a CS, then this should be done as families will complain about the pain and length of labour and NVD.

Some managers identified CS as the ideal mode of delivery, because the hospital must generate income and there is little money in doing NVDs.

"If the woman doesn't need a cesarean section, we vigorously advocate natural childbirth. In natural childbirth, the degree of trauma and complications is lighter. But we are afraid of medical disputes, so when women and their families ask for caesarean section, we sometimes will agree, especially in the township hospitals. Though some women ask for cesarean section during labour, we persuade

them to have natural childbirth. However, when they give birth they will complain about the pain." IDI13, Dr, C, F, 49years.

"The ideal delivery in my mind happens in a peaceful, nice, safe environment. Doctors abandon their interests and we respect women's choice of delivery. Depending on the hospital's conditions, we support their selection as much as possible." IDI3, Man,T, M, 54years.

"I think that natural delivery is good. It is not only good for women, but also for babies. But at present, considering the needs of women and the environment of the hospital, it may be better to do CS. The hospital financial system constrains us: if we don't earn money, I can't distribute wages. Natural delivery just costs 380 Yuan; it's not enough to distribute wages. So, as a doctor I think a normal delivery is good, but caesarean section is good from the manager's view." IDI2, Man, T, M, 51years.

Family present

Health care providers had a variety of views about family members being present during childbirth. Some explained that there are advantages and disadvantages of relatives being present at delivery: they provide support to the woman or they say it is difficult to deliver and cause stress. Some thought that relatives should accompany women to provide support and this will help with the pain. Others thought that it was up to the woman herself to decide. Another provider had learned from training that relatives should accompany women in labour and delivery but felt that this would interfere with the asepsis of delivery.

"Relatives being with the woman affect her. If her mother helps her to relax and tells her that every woman must experience this, it is a comfort to her. But if she tells her it is not easy to deliver a baby, she will be more stressed. So someone being with her during delivery has its advantages and disadvantages." IDI6, Dr, T, F, 38years.

Position

Most health care providers said that lithotomy position is ideal for delivery. Most had not seen or did not know about other positions for delivery. A few emphasised that the most comfortable position is the ideal position for delivery. A few health care providers said that safety is the most important aspect in choosing position for delivery, but they did not elaborate further.

"Sometimes women are on their knees and the others lie on the labour bed. But we don't let them to do this, just keep in lithotomy position. I haven't practiced midwifery in those styles so I dare not." IDI7, Dr, T, F, 33years.

Place of delivery

The majority of health care providers thought that women should deliver in county hospitals where the conditions are better, there are more services such as surgery, paediatrics and anaesthetics, and more staff as this makes delivery safer. However, some providers thought that township hospitals varied a great deal and if their condition is poor then women should attend the county hospitals, and if their condition is good, then it is safe to deliver in the township. Some providers thought that women should deliver in the township hospitals as long as there are no emergencies during childbirth. Township hospitals are more accessible being close to women's homes, the fees are less than at higher level hospitals and staff treat women well. A few doctors reflected that the level of hospital is not important as long as the hospital is clean and delivery is aseptic.

Most managers thought that "normal" women should deliver in township hospitals where it is cheaper, and high risk women should deliver at county or higher level hospitals. Many managers emphasised the importance of families' ability to pay for care.

"Above all, we should guarantee the safety of mothers and babies. Deliveries that take place near women's homes are very nice. Of course, such deliveries should be done under certain conditions. The mother and baby must be ok and there is no emergency." IDI5, MCH, T, F, 36years.

"Now, we have antenatal care including high-risk screening. High-risk women should deliver at least in the hospitals of county level. But normal women should have childbirth in township hospitals, considering their family burden and our resources." IDI3, Man, T, M, 54years.

"It is like when you choose a hotel. You choose according to your ability to pay. If you have a better economic level, you can choose hospitals with better conditions. It is not good for a woman to go to a hospital where she cannot afford the care. So in hospitals with higher costs, the services and conditions are better, whereas township hospitals where the costs are less, the services and conditions may be poorer." IDI5, Man, C, F, 41years.

Environment

The majority of health care providers reported that the environment for delivery should be clean, tidy, quiet, comfortable and warm. Other opinions included: soft music should be played in the delivery room to help women relax; air conditioning should be available; delivery room should be sterilised; mother and child should be in the same room; and the colour and organisation of the delivery rooms should be changed to make women feel relaxed.

The managers talked about the need for the environment to be safe with good medical equipment and enough staff. Delivery room should be clean, quiet and peaceful with television and sofas. Following delivery the mother and baby should share the same room.

"If conditions permitted, the environment must be warm and comfortable. The color and arrangement of the delivery rooms should be changed to make women feel relaxed." IDI13, Dr, C, F, 49years.

"Should have essential equipments, such as delivery bed, air conditioning. Contaminated area must be separate from clean area. Mother and baby should be in the same room. It should be clean, have air conditioning, television and also some soft sofas. The room should be sweet and peaceful." IDI4, Man, T, M, 52years.

Pain relief

Most health care providers perceived that pain relief is not available for women in labour and cannot be given. They can help women by talking and providing comfort. However a few providers knew of some alternatives for pain management: entonox and water births can be given to help with pain; oxygen and nutrition can be provided to help the pain; and oxytocin can be given after the cervix has dilated to 4-5cm to speed up labour.

Most managers identified that the only way to manage labour pain is to talk with women, support them through labour and provide some comfort. A few managers said that a small amount of drugs can be used; anaesthetists can give "painless deliveries"; and music can help to relieve the pain.

"We do not have such medicine, just encourage mentally, or improve the environment condition, and she can decide any position she likes. Make her family accompany her. And you should treat her kindly and give her a better service." IDI17, Dr, T, F, 36years.

"If it is allowed, we may use some anaesthesia methods. On TV, there are families staying with women and music is played. Perhaps, the main methods are these. Doctors can communicate with women as much as possible and let them know about labor." IDI8, Man, T, M, 38years.

7.2.3 Ideal birth attendant

Skills and characteristics

The majority of health care providers and managers identified that experience of doing deliveries and CS is an important characteristic of an ideal attendant. Attendants need to be able to monitor labour and identify when women can have a NVD or need a CS, as well as manage emergencies and

neonatal resuscitation. They also emphasised the need for providers to work in an ethical manner, so that they only provide care that is needed. A good attitude towards women is also important – being kind, responsible and enthusiastic. Managers also recognised that birth attendants should be able to comfort women and relieve their pain.

A few health care providers identified the ideal birth attendant as having an understanding of other departments within the hospital and skills such as surgery and paediatrics. They should be able to remain calm and not be in a hurry to do the delivery.

"They must be very familiar with the delivery process and have experience in doing deliveries. We must have some further studies or we dare not do delivery." IDI6, Dr, T, F, 38years.

"They must be skilled. In our hospital, even the youngest doctor has already worked for more than 10 years, she came here in 1996. All of us are experienced. Need to know how to deal with labour, antenatal care, promptly and correctly dealing with women in special circumstances, neonatal resuscitation and care." IDI10, Dr, C, F, 38years.

Qualifications

Many health care providers and managers said that doctors, assistant doctors and midwives can conduct NVDs. They need to graduate from medical schools or technical secondary schools and then receive specialist training which is usually in another hospital. They must have a clinical license to do midwifery or obstetrics, have regular training at the MCH station and pass examinations to continue their professional license.

"At least, they should graduate from formal medical schools, get special training and have a certain expertise. Without professional basis, skills are just empty shells." IDI1, Dr, T, F, 50years.

"When I worked in the county hospital, midwives did everything. Midwives work more comprehensively than doctors. Doctors are general practitioners and study internal medicine, surgery, paediatrics and obstetrics and gynecology. Midwives just learn the profession of midwifery over three years. Now midwives basically have nothing to do, all is done by doctors. Midwives are assistants. Patients look for doctors to do the delivery." IDI8, Dr, T, F, 43years.

7.3 Resources

In this section the resources associated with the provision of childbirth care are explored. These include funding of MCH care, staffing of services including the types of health workers, how they are

recruited, retained and paid, pre-service and in-service training, availability of drugs and equipment, and the hospital environment.

7.3.1 Funding services

The sources of funding for MCH were identified as government allocations, revenue from clinical services, and provincial and national projects. All health care providers, managers, and key informants felt that the government funding of MCH is insufficient. There is no specific funding earmarked for MCH. It is included in the allocation to public health and individual institutions allocate part of these funds to MCH. Most of this funding goes to providing salaries, and there is little, if any, allocated to developing MCH services.

The majority of all types of respondents identified negative effects of the limited funding. Hospitals must generate enough income to support the staff salaries. This leads to an incentive to provide care that generates more profit such as unnecessary investigations, delivery care and more specifically CS. Services such as postnatal care cannot be provided, more staff cannot be employed, and equipment cannot be bought. Some providers and managers reported that the limited funding can affect enthusiasm to provide maternal health care. With improved funding, they perceived that more staff can be employed, training can be given so that skills and knowledge as well as motivation are improved. As a result, better quality of care can be provided and this will attract more women to attend facilities.

In contrast, some health care providers and managers thought that the funding problems do not affect the care they provide. They focus on systematic maternal care management (5 antenatal visits, hospital delivery, and 3 postnatal visits) which the hospital and government leaders emphasise. The manager of a county level hospital said that the lack of funding earmarked for maternal health care has no effect on the care they provide. This hospital is used to supporting their staff by earning its own money through user fees and does not depend on government policies and funding.

"As a medical institute, we are used to supporting ourselves by earning our own money. We don't depend on country policies and allocated money, so we don't consider it." IDI7, Man, C, M, 51years.

"The government just allocates funds for the salaries of the staff, no other funds. The government should increase funds appropriation for other use, for example, training, providing some equipment, improving the environment of labor and delivery rooms, providing health education to women. This work also needs funding. If we strengthen the training, the quality of care will be better. If the environment is improved, women will feel more comfortable and secure." IDI8, Man, T, M, 38years.

7.3.2 Human resources

Types of staff

Discussions with health care providers, managers and key informants revealed that there are several types of staff working in maternal health care in rural areas. Table 7.2 describes the types of staff, the training they receive and their role in maternal health.

Table 7.2 Types, training and roles of staff working in maternal health in rural areas

Title	Basic training	No. of years of training	Further training	Role in maternal health / obstetrics
Obstetric doctor	Clinical medicine training at university, college or secondary technical school Minority: MCH training and work in hospital and receive further training and work as obstetric doctor	3 years in college or secondary technical school or 5 years in university	• Delivery license: initial authorisation and examination is done by MCH station at 2 year intervals • Once received delivery license must renew this every 3 years by having training and examination at MCH station • Work in obstetrics and have further training before practicing independently	• Conduct NVDs, instrumental deliveries and CS • Provide antenatal and postnatal care • Some also take on role of MCH worker (see below)
Midwife	Midwifery training at college or secondary technical school	3 years	• As above	• Conduct NVDs • Assist with instrumental deliveries and CS • Provide antenatal and postnatal care
MCH worker	MCH training at college or secondary technical school	3 years		• Collect statistics on MCH • Provide immunisations • Monitor growth and development of child • Provide health education • Some MCH workers work as obstetric doctors
Assistant doctor	Clinical medicine training at college or secondary technical school	3 years	Managers may send them for further training	• Can apply for authorised assistant doctor position after 1 year • Can apply for position of doctor after 5 years as authorised assistant doctor
Village doctor	Clinical medicine training (same as doctor training at secondary technical school, but only do 1.5 years or get low scores)	1.5 or 3 years		• Provide antenatal, postnatal care and health education.
Village family planning worker	Do not have training in training institutions Graduate from junior or high school	Unknown length of training	Receive training at county FP station to provide condoms, pills	• Identify pregnant women in the community • Give health education

Recruitment of staff

Recruitment of staff for rural areas is very complex reflecting the historical changes in health service policy and includes allocation by the government, recruitment by the hospitals, examination, positions are passed to family members, and employment of soldiers. Table 7.3 illustrates the types of employment and their key features.

Table 7.3: How staff are employed in township and county hospitals

How staff are employed	Description	Key features
1. Allocation (pre 1997)	• The county government allocates staff to the different hospitals – ended in 1997	• Account for major proportion of staff in township hospitals • Authorised staff • Did not graduate from colleges or universities, some graduated from secondary technical schools, but went to work in hospitals and received training there • Poorer skills • Aged 40 years and above
2. Recruitment for non-authorised positions*	• The hospitals recruit new graduates • Township hospitals will recruit staff for non-authorised positions • County hospitals will also recruit staff for non-authorised positions but may make them do an examination	• Non-authorised staff • May become authorised later through examination • Do not have much clinical experience. • Must have training and support to develop skills • If they get better skills, then many leave for higher level hospitals
3. Examination and allocation for authorised positions*	• Health bureau and hospital will advertise their authorised positions and they must get a certain number of applicants (e.g. for 1 position at least 4 applicants), then the hospital can apply to the health bureau to be included in the county examinations • New graduates and those exiting staff who want authorised positions will take this examination if they fit the criteria i.e. age and education level. Before examination, individuals will indicate where they want to work. Then depending on scores and availability of authorised positions, the health bureau will allocate them to the hospitals • Examination conducted by county personnel department and health bureau. Professionals will develop test paper	• Authorised staff
4. Position can stay in families	• Older people retire and their children take their position • Stopped in 1990s	• Small number
5. Soldiers	• Soldiers work in township hospitals • No medical background	• Small number • Common before 1997 • Do not do clinical work. Some do MCH care such as child health or as drivers or cleaners

* Authorsied and non-authorsied positions are explained on the following page

Another area emerging from the discussions is the use of authorised and non-authorised positions.

- Authorised staff: number of authorised staff is decided by the personnel section of the county government, and the financial section allocates funding to the hospital according to the number of authorised staff. The county government covers 55% of the salary of each authorised staff for township hospitals. In county hospitals, county government provides a fixed amount per person per year e.g. 5000 Yuan.
- Non-authorised staff: the hospital provides the whole salary. The county government does not provide any salary to these workers.
- Staff may first be employed as non-authorised staff, but after a period of time they can apply for an authorised position if there is a vacancy or if the government allocates another authorised position.
- In the county hospital all staff working in maternal health (doctors and midwives) have authorised positions.

There are several issues with employing staff in the rural areas. It is difficult for hospitals, and in particular the township hospitals to employ doctors graduated from universities. They are recruited to city and perhaps county level hospitals. Among the new graduates, those with high scores in the examination will go to the county hospitals. Staff who are allocated to the hospital by the county health bureau are not licensed to do deliveries so they must receive training for the license. In addition, new doctors and midwives have little clinical experience and therefore need to have "on the job" training and close supervision. It is recognised that most township hospitals do not have good "trainers". As there are fewer opportunities to develop clinical skills in the township hospitals, it will take a long time to develop skilled and confident practitioners. The government places a limit on the number of authorized staff in township hospitals because they have to provide half of their salaries and this results in a shortage of staff.

"In summary, we need more staff, money and equipments. If we don't have, everything is empty. I have asked for more persons, but personnel bureau doesn't allow; I asked for more money, but health bureau doesn't give. I have many unauthorized people. If they are not satisfied with the salary, they will go away." IDI6, Man, T, M, 51years.

"Some staff are recruited (see point 2 in Table 7.3). *Most graduated from secondary technical schools and some even have bachelor degrees. Most are good but some are poor. Better students go to the city hospitals and the rest come to the township hospitals. They do not have much clinical experience. Township hospitals do not have good teachers and even if they have good teachers it will take time to*

study. If they improve they will want to leave. If they are not good, they will stay in the hospital but will not take much responsibility. The third group is through examination. Those who have high scores will go to the county hospitals and those with low scores will go to township hospitals. So generally speaking township hospitals cannot keep skilled staff and have no way to attract skilled staff. This is a key issue." KII1, M, 45years.

Retention of staff

It is also difficult for township hospitals to retain staff. Staff allocated to the township hospitals do not want to stay because of the low salaries. They often move to higher level facilities where they have the potential to develop their skills and earn more money. Authorized staff receive twice the salary of unauthorized staff. Therefore unauthorized staff apply for authorized positions in different facilities. College students, who were allocated by the government to work in the township hospitals, do not stay and find ways, such as through relatives, to transfer to higher level hospitals.

"No-one is willing to stay here because of the low income. If someone is not authorized in the township hospitals and he or she has some other methods of getting a position such as with someone's help, they will go to the higher level hospitals because there are more patients in those hospitals and it is where they can improve their skills and gain more income". IDI15, Dr, T, F, 36years.

"Authorized staff will have more salary than unauthorized staff, nearly twice the amount. So the unauthorized is not so stable. If he sees a better institution, then he will leave for this institution. Sometimes the township hospitals send the unauthorized staff out for training, but eventually they will leave." KII2, M, 57years.

Salaries of staff

The government provides a proportion of the salary to authorized staff. In township hospitals, authorized staff have 50-60% of the salary paid by the government (approximately 1800 Yuan per year) and the remainder by the hospital itself. In the county hospital, the government provides a flat amount which varies from year to year e.g. 5000 Yuan. Salaries of non-authorized staff are paid entirely by the hospitals and are usually less than authorized staff. The salaries may also vary according to job title, qualification and experience.

Salaries are supplemented by bonuses paid by the hospitals at the end of the month and year. Every member of staff, whether they are authorized or non-authorized, is assessed against criteria, and bonuses are awarded or withheld. Most informants would not divulge these criteria. However, bonuses are given for complete medical records and positive feedback from women. A few

managers commented that other government workers receive subsidies for buying and decorating houses, but this not available for health workers in township hospitals.

"I have to check their medical records every month. Because when they hand me a complete medical record, I have to pay them additional wage." IDI2, Man, T, M, 51years.

"In our hospital we emphasise our salary and bonus are related to quality of care and attitudes of doctors, women's feedback and whether they have a medical accident. Of course the salary and bonus are associated with the hospital's income". IDI6, Man, T, M, 51years.

Some township hospitals find it difficult to make enough profit to provide salary for their staff. Health care providers reported not receiving any salary from the hospitals for several months or even years as the hospital had not earned enough money. Some managers thought it is their responsibility to assure their staff's basic salary. Other managers thought that it is up to individual staff to generate enough income to support themselves.

"It is difficult for township hospital to provide salary. As a manager, I must provide the salary of every doctor which requires us to make more profit. We must try our best to get rid of the doctors' worries and let them conduct their work knowing that their basic salary is assured." IDI3, Man, T, M, 54 years.

There were several views about the bonus system. Doctors who work hard to generate more money for the hospital feel it is unfair as this will go to all staff within the hospital. Doctors who are unable to generate much income for the hospital because of the nature of their job, also think this bonus system is unfair. Some key informants considered that many doctors do more CS, prescribe some unnecessary examinations such as ultrasound or other tests to earn more money for the hospital.

Most health care providers and managers said that they do not accept money or gifts from patients as there are regulations prohibiting this practice. However, key informants reported that this practice is common and more frequent in obstetrics and surgery departments and the county level hospitals. They identified that there is a culture that by giving monetary gifts or "red packets", women and families feel assured of being provided good quality care. In township hospitals, families may give money or gifts of food for NVD and in greater amounts for CS. The practice of giving "red packets" is more frequent in county hospitals, as staff are confident that most women will stay in the facility for delivery because of perceived better quality care. Payments are greater in the higher level hospitals.

"Perhaps the doctors' attitude will be better after receiving red package. Although it is just a few doctors, but it is happening, especially in the department of Obstetrics and Gynecology. Most red packets happen in the surgery department, and then in obstetrics. It is bad in county hospitals and in the township hospitals it is better." KII1, M, 45years.

"Every case of Cesarean section, the doctor will get a red package, this is a hidden rule. If it is done in a city hospital, the payment is higher. So obstetric doctors in Yichang city all have cars and houses, do you think they bought them with their wage? No, it is through doing CS and receiving red packages. Although we have many ways to control and the Ministry of Health has some control methods, but they have no effect. We have such a social atmosphere of giving red packages. If the manager stops this behaviour then the income of the doctors will decrease. This will definitely happen. We just joke about this. It also happens for normal delivery. But if the family has a female baby, they usually buy some fruit and sugar, and if a male baby, they will present 200 yuan or more to the doctor." KII2, M, 57years.

Impact of low staffing and quality of care

As a result of problems with recruitment, retention and low salaries, many respondents identified a shortage of staff working in maternal health in both county and township hospitals. They recognised that as a result of this, there are several issues with the quality of care being provided:

- Staff cannot be with women all the time during labour and delivery. This has resulted in an increase in CS to a very high level;
- Workload is heavy, with frequent night duty resulting in extreme tiredness;
- In the township hospitals and TCM hospital no nurses are allocated to the obstetric department, so nurses from other departments assist who are unfamiliar with obstetrics;
- In the county and township hospitals there are no neonatal units. There are no paediatricians in the township hospitals and so any neonatal emergency is managed by obstetric doctors and general doctors. In the county hospital, there are paediatricians assigned to the paediatric department;
- In the township hospitals, as there is only one laboratory technician and ultrasonographer, blood tests and ultrasound scans cannot be done at night. However, in the county hospital, laboratory staff are on duty for the full 24 hours and doctors can contact the on-call ultrasonographer;
- Staff are unable to go to other hospitals to gain more experience, do not have time to study and cannot attend training;

- In smaller township hospitals there may only be two doctors and they have to manage everything including emergencies;
- In one township hospital there are approximately 200 CS annually and only one of the three obstetric doctors can perform CS. So she must persuade the other surgeon to do some of the CS, resulting in medical accidents;
- There is also a shortage of anaesthetists with one in the county hospital and none in the township hospitals.

"There are several factors. We have not enough manpower and cannot accompany women 24 hours. Now caesarean section is high about 90%. We mainly lack manpower." IDI8, Dr, T, F, 43years.

"There are only about two doctors in small township hospitals, so when an emergency happens, only two doctors deal with it. Also when we meet problems with the baby, it's better to ask a paediatrician to manage. But the paediatrics in a township hospital is very weak." KII2, M, 57years.

"The county hospital may have a professional anaesthetist, but the township hospitals do not. Most anaesthetists are clinical doctors and have had 1 year further study. The most important responsibility of an anaesthetist is the preparations and dealing with any complications. But this is weak in most township hospitals." KII2, M, 57years.

7.3.3 Training

Pre- service training

Most health care providers, managers and key informants recognised that the pre-service training does not equip doctors, midwives and MCH workers with the necessary skills and knowledge to provide care. In particular they identified several areas of care for improvement: neonatal resuscitation; and management of complications. Health care providers in township hospitals emphasised that as they have few opportunities to manage obstetric complications, they have neither the skills nor confidence to manage such cases.

Many providers from township and county hospitals and key informants talked about CS and skills. Some township hospitals do not have doctors who can do CS, and this deters women from delivering in their hospitals as they think that if they have problems they will need to be referred. Some doctors without adequate qualifications and training will do CS.

A minority of health care providers thought that the skills of the staff are satisfactory and they can manage complications such as postpartum haemorrhage. They felt that their managers support their

development by sending them to other hospitals to gain experience.

"There are many laws and rules, and before doing delivery, doctors must get authorization or a certificate. This is the biggest challenge to our township hospitals. The people allocated may not have a certificate, so there is an urgent need to strengthen them." IDI4, Man, T, M, 52years.

"We majored in clinical medicine before, we learned everything including internal medicine, surgery, paediatrics, but once you decide to stay in obstetrics department, you need to study specially. We can't do the delivery when we just begin to work. We need to learn from our tutor. I feel it'll need 5 years as a gynaecologist but as a midwife, one year or so will be OK, because when a midwife encounters a difficulty, she can consult a doctor." IDI9, Dr, C, F, 42years.

In-service training

Health care providers, managers and key informants reported two types of in service training: health care providers visiting other facilities to gain clinical experience by working alongside more experienced doctors; and attending training sessions.

Most health care providers reported having little opportunity to go to higher level hospitals for experience and clinical training. Those who are able to do this, found it very useful.

Training days are generally organised by the county health bureau and MCH station, but some are provided by projects. The content of the training includes: antenatal care, delivery care, postnatal care, neonatal resuscitation and management of complications such as postpartum haemorrhage or pregnancy induced hypertension. The training tends to cover theory but with no opportunities to practice skills. Training for renewing delivery license is held by the MCH station every year. The content of this training is the same every year. The license needs to be renewed every 3 years

Positive perceptions of the training include: the training content is the same and so refreshes knowledge learned the previous year; health care providers receive credits for attending training and this is linked to their salary and bonus.

However there were many criticisms of the training. Most doctors perceived that there are too few training sessions, they cannot take time off work to attend training, and it involves too much expense. It is difficult to send health care providers from the township hospitals to the training as this will leave no one to staff the hospital. The training is not helpful in improving quality of care because they cannot follow what the training says and they make mistakes. Short training does not have much effect on development of skills as the content is only theory with no practice of skills. The training is too short and there are no examinations.

"We come for training. You spend 3 years training and didn't learn well, let alone just in 3 hours! They also have no test. We should take time to study whole-heartedly. If you have no target, you will learn nothing." IDI2, Man, T, M, 51years.

"The training is at our MCH station or in MCH institutions of higher level. But there are many problems with the training. Firstly the length of training is too short. Secondly there is not enough staff participating in the training because in some township hospitals, it is difficult to send some doctors for the training. It is definitely not enough." KII1, M, 45years.

Perceptions of training needs

Most health care providers and managers reported that training should focus on improving skills and there should be opportunities to practice skills at higher level facilities. Health care providers would like to have training on neonatal resuscitation, neonatal care, observation of labour, delivery skills, management of problems in labour and antenatal care. A few health care providers reported that training should be given to the whole department not just individuals; the training that is provided is enough and more training is not necessary; new areas should be taught such as use of pain relief and relatives accompanying women in labour.

Key informants thought that staff should participate in regular training every one to three months. The health bureau and MCH station should organize more training about management of complications as they have fewer opportunities to see these cases in their facilities. Doctors in the county hospitals should have training on intra-operative and post-operative complications.

"I think we also need actual practice on antenatal check up and delivery process. I think it is important to have training in observation of labour." IDI6, Dr, T, F, 38years.

"They need some midwifery knowledge. But now the training is less. Nowadays the rate of C section keeps rising. There is poor understanding of difficult delivery. If there is the slightest problem, they will choose C section. Previously experts taught us how to deal with difficult delivery but now we have little awareness." IDI5, Man, C, F, 41years.

"More training about management of complications is needed. Especially in township hospitals, where doctors have fewer chances to see emergencies as women with serious complications are referred to county hospitals. And also if they do not go to bigger hospitals to have further study it is difficult for them to see these patients." KII2, M, 57years.

7.3.4 Other resources

Drugs

Most health care providers and managers perceived that drugs for labour, delivery, and emergencies including neonatal resuscitation are available in the hospitals. They also said that drugs are checked regularly for their expiry date and are replaced from the pharmacy if they are out of date.

However a few health care providers and key informants identified problems with drug availability: only basic drugs are available and if women have more serious problems then they will be referred to higher level hospitals; neonatal resuscitation drugs are limited; some drugs such as ergometrine, misoprostol and magnesium sulphate are not available.

"Drugs are supplied by maternity wards. Drugs like oxytocin, magnesium sulphate, epinephrine, naloxone, adrenaline are available. We will change drugs in time once they are expired. We buy drugs through hospital system." IDI1, Dr, T, F, 50years.

"The third problem is the equipment and skills. The lack of equipment is serious in townships. The equipment used for delivery is a simple delivery bed, oxygen equipment and some necessary emergency drugs and equipment. But in some hospitals, they do not even have the emergency drugs. For example, magnesium sulphate, actually it is cheap, but sometimes the doctor has no idea about this drug. So they don't keep this drug. So the doctor does not know what to use or how to use." KII2, M, 57years.

Equipment

All health care providers, managers and key informants reported that county and township hospitals have enough materials such as dressings, cotton wool, needles and syringes, and are able to sterilise equipment and materials.

In the county hospitals, most providers, managers and key informants considered that the equipment is adequate for NVD, CS, some complications, and neonatal resuscitation. However, a minority of health care providers identified problems with the equipment. The electronic machine for monitoring foetal heart has been broken for several years. There are no working incubators, and so babies are transferred to Wuhu city when there are problems. They perceived that because of poor equipment coupled with limited skills, women with complications must be transferred to higher level hospitals.

There are several problems with equipment in the township hospitals. Health care providers and

managers identified a lack of equipment to deal with neonatal emergencies and sick neonates such as neonatal ambubag, tracheal intubation equipment and incubators, inhibiting their ability to manage neonatal resuscitation, premature and sick babies. The delivery beds are old and need to be replaced. Others stated the need for more basic equipment like complete delivery sets, scales to weigh the baby, and separate sphyganometers and telephones for the clinics and delivery rooms.

The director of the MCH station also identified that township hospitals have difficulty dealing with obstetric emergencies as there is no blood bank and ventilator. He thought that emergencies should be managed in the county hospital, where they have more equipment and a small store of blood.

However, others thought that the equipment was adequate in the township hospitals. One manager recently spent a lot of money to buy equipment including ECG, monitoring machines, and computers. The director of the county health bureau perceived that the township hospitals have enough equipment such as stethoscope, sphyganometers, delivery sets and equipment for neonatal resuscitation.

"Bed and machine are both too old. They both should be replaced with new ones. We don't have oxygen equipment. First-aid equipment is lacking too." IDI5, MCH, T, F, 36years.

"Equipment here is certainly better than that of township. But because of lack of infant incubators, we have to transfer to Wuhu city when there are problems." IDI11, Mid, C, F, 44years.

"Mainly lacking equipment for newborn resuscitation. For example, the resuscitation set and the newborn ventilator. But they have adult anaesthetic machine. They do not have the simple resuscitation set such as the ambu bag and mask. They also do not have enough drugs. These are all serious problems. If we cannot solve those problems we should not provide delivery services." KII2, M, 57years.

7.3.5 Hospital environment

The majority of health care providers, managers and key informants identified that although all delivery rooms have air conditioning, there are problems with the environment of the township hospitals. The delivery rooms are small, and there are no separate facilities for washing hands. There are no toilets or bathrooms attached to the labour or delivery room, but there are public toilets in the hospitals which women use. In all hospitals, women and their babies have to share rooms with at least 3 other patients and their families.

A minority reflected that the labour and delivery rooms are good. Two township hospitals will have new buildings and the providers hoped that the environment of the labour and delivery rooms

would be better. The director of the MCH station reported that the environment in the township hospitals has improved with labour, delivery and abortion rooms now being separate and designated health education rooms.

Most health care providers, managers and key informants were satisfied with the new county hospital building housing new delivery and labour rooms and wards. Each antenatal / postnatal room has two beds and bathroom. Women and their babies can stay in one room with their family. Previously, women had to share rooms with several other women, and there were no bathrooms and only a communal toilet. A few of the county health care providers suggested that in order to improve cleanliness, a specific person should be responsible for cleaning the labour and delivery rooms.

Most health care providers and manager in the TCM hospital were dissatisfied with the environment of the delivery, labour and postnatal rooms. They thought that the delivery room is too small with only one delivery bed and a small extra bed if another woman arrives in labour. There is no toilet in the labour or delivery room. The wards, shared with the surgery department, are small and crowded and have a toilet but no bathroom.

"Every lying-in woman should be in a single room with two beds. The pregnant woman is different from other patients, because she should take care of the baby. And she should be taken care of. The hospital room should be installed with bathroom and toilet." IDI7, Dr, T, F, 33years.

"We moved to this building in 1993. Other hospitals have better environments with rooms having two beds with toilet and bathing facilities. Tomorrow we will move to new building, where we have standard wards. The environment is better. Now, condition in rural areas is better, people will ask for a comfortable environment to deliver." IDI10, Dr, C, F, 38years.

7.4 Policies

7.4.1 Evidence-based care

There is limited understanding of evidence-based care amongst all types of respondents. Most health care providers and managers had not heard of evidence-based care or had heard the name but did not understand it. The key informants had heard of evidence-based care but thought it is a new area and knew little details. However, a few health care providers described it as using evidence from studies using large samples of people, bringing together information from different sources and drawing a conclusion, or providing care according to textbooks.

When evidence-based care was explained, there was a range of responses from health care providers and managers about how evidence-based care is used. Both providers and managers identified that they provide care according to the textbooks and their own experiences and experiences of others, but sometimes this can be difficult because of lack of equipment. Providers described giving the cheapest or few drugs, reading obstetric journals every year, using their experience of different situations and reflecting on this to provide care to their patients, as evidence-based care. Managers identified that professional qualifications are important for evidence-based care. When recruiting staff for their hospitals, they assess their professional qualifications and abilities to diagnose and treat patients. They also identified that staff learn how to provide care from more senior doctors and teachers in county or higher level hospitals.

However some managers, health care providers and all key informants recognised that evidence-based care is not currently used in any maternal health care. They considered that it would be difficult to use in rural China for several reasons: it is a new concept and this requires time to accept; there are not enough staff, skills, or equipment to provide this care; staff will worry about the negative effects of new treatment; many journal papers are poor quality and it would be difficult for some staff to identify the good papers; if they provide care according to papers and then there is a medical dispute, the doctors would be punished; doctors can safely follow textbooks, government documents and policies.

"I think it is useful to know the latest medical skills. It is also helpful to update our knowledge and skills. In our routine work we always treat patients with the old knowledge and skills. If we can do like this evidence-based medicine it is a process to update knowledge. If we can use this knowledge on patients it is good for patients." IDI6, Dr, T, F, 38years.

"I don't think evidence-based care is used in our hospitals. Perhaps they know the definition but they do not use it." KII1, M, 45years.

"I have heard of evidence-based care but I am not clear about it. I saw it in magazines, but I just know the word and don't have any further information about it." IDI8, Man, T, M, 38years.

Availability and use of clinical guidelines

There are clinical guidelines for use in maternal health care in areas such as breastfeeding, high-risk pregnancy, resuscitation of newborn and management of complications such as postpartum hemorrhage and amniotic fluid embolism. They are produced by the provincial MCH station that sends them to the county MCH station for distribution to all hospitals.

However, these guidelines appear to be rarely used. Many health care providers and managers in the township hospitals reported that there are no clinical guidelines and they follow their obstetric textbook. Managers perceived that doctors should practice what they learn in their training and use the training materials.

Most county level health care providers reported that there are national guidelines and standards for delivery care and MCH care. However most do not follow these and use their textbooks. In the TCM hospital, guidelines are put on the walls of the delivery room. If they are not followed, then the manager will blame the health care providers. However, some guidelines are old and out of date.

"I am not sure but I think there are some guidelines for delivery. I can't remember what they say. Guidelines provide us with standards and limit our behaviour. Actually we know them long ago and we do our routine work just like it is within in these guidelines and so gradually we forget it." IDI6, Dr, T, F, 38years.

"The clinical doctors should all have learned how to deal with these circumstances. We don't have such guidelines written out. But I think every doctor should have the clear and definite guidelines in their minds, which guide them to carry out every step correctly." IDI8, Man, T, M, 38years.

"The province will hand out some guidelines. We hand them out to the townships. Sometimes we also buy some guidelines. Too many guidelines, I can't remember. For example, PPH, newborn resuscitation, we have a very thick one. And also every year we have training for the doctors and we will develop the training materials. They have some effect on doctors. After all, the doctor will read them more or less. But to the women, it is useless. They cannot receive these materials. But if the doctor reads them and provides standard treatment it will be good for women." KII2, M, 57years.

7.4.2 Supervision

The main method of supervision reported by the respondents is the inspection of the maternity cards. Every three to six months, the county health bureau and the MCH station visit each hospital and check the maternity cards for the number of antenatal and postnatal visits. For the county hospitals supervision visits are conducted by the city MCH station staff and city hospital obstetricians. A complete antenatal card means that the woman has received 5 antenatal visits and 3 postnatal visits. If there are mistakes in the cards, then the hospital has one month to correct them. The health bureau also inspects the delivery notes, partographs and prescriptions. A report is submitted to the manager of the hospital giving suggestions on how to improve the records. If a hospital does well in the assessment compared with other hospitals in the county, they receive

rewards. These reports of the supervision process are less detailed than the policy document illustrates (see Figure 7.2).

Figure 7.2: Summary of policy document for supervision of facilities

Policy: Supervision of facilities	
• County health bureau and MCH station assess the facilities every 6 months • The assessment includes 8 sections: see below • There are detailed criteria and scores for each sections	
Maternal management (15 scores) • Early pregnancy screening, antenatal examination, post-partum follow up and day 42 mother-infant check up carried out • High risk pregnancy screening and management • Basic resources for pregnancy management available • All cards and books are completed • Intra-partum health care focuses on prevention of 5 complications: prolonged labour, infection, labour injury, bleeding and asphyxia; and promotion of labour monitoring through partograph and management of high risk women	**Family planning (10 scores)** • Ultrasound services including staff are registered in the County Health Bureau and MCH station • Ultrasound and obstetric staff agree to obey Maternal and Infant Health Care Law. Signed document should be filed with MCH station • Double-signature needed for ultrasound examination of pregnant women above 16 years • Reproductive health service certificate or Certificate for second child delivery and ID card are checked • Monthly report of number of deliveries and abortions to family planning department
Certificates (9 scores) • Valid Medical Institutions Practice certificate and Delivery Services certificate • Delivery assistants staff have delivery certificate • Strict adherence to process of issuing birth certificates • Fees for services according to county standard and displayed in public place	**Baby friendly hospital and institutional delivery (10 scores)** • Promotion of breastfeeding: establishing a school, hotline and support organisations outside hospital; training of staff • Mother-infant share same room • Obstetric department layout meets criteria • Necessary equipment • Staff are qualified and skilled
Child management (20 scores) • Child health examinations are conducted • Health education given • Early identification and treatment of problems • All records completed accurately • Necessary equipment	**MCH information management system (20 scores)** • Rate of IC cards issued • Maternal management system • Child management system • Management system for issuing birth certificates
Qualifications and health education (8 scores) • Qualifications of staff meet requirements • Venue and equipment for health education available • Set up health education material box	**Statistics (8 scores)** • Promptness and accuracy of all reports • Child and maternal deaths are reported and investigated • Missing reports are investigated • Collecting, filing and storing of all reports

Other methods of supervision were described by a few health care providers and managers. These include: the health bureau and MCH station assess the books recording sterilisation of equipment

and check the dates of sterilisation; the health bureau and MCH station check out-patient registrations and prescriptions; the health bureau and MCH station assess the delivery room for cleanliness, sterilisation of equipment and drugs; the family planning department visit the hospitals once a month to collect data on deliveries and family planning operations; the Epidemic Prevention station visit every three months to test for infections.

Several health care providers, managers and key informants reported that there is no supervision of labour and delivery care. They perceived that the supervisors are not concerned with how doctors treat women or how women are cared for during labour and delivery.

There were mixed views about the effectiveness of this supervision. Of those who thought it was effective, most were unable to describe in what ways. Others explained that the supervisors are experts and they can identify mistakes which the doctors can then solve. The supervision ensures that many antenatal examinations are done and this will help to identify high risk women. Supervision encourages health care providers to learn more and improve skills. However, the remainder thought that the supervision has little or no effect on the care that they provide. They perceived that this type of supervision forces them to provide false information about the number of antenatal and postnatal visits in the maternity cards because if standards are not met then the year end assessment will be poor affecting the funding for the hospital. They reported that the health bureau advises them to alter the data.

Most managers perceived that the supervision visits has some effect on the care being provided: changes are made according to suggestions made by the supervisors; supervision guarantees that health providers complete their work according to the rules. However, some managers identified problems with the supervision, arguing that there are no effective ways to monitor the process of NVD or CS.

The key informants viewed supervision as being helpful in reducing maternal and neonatal morbidity and mortality. Without any supervision, hospitals would do nothing to improve the quality of care. However they identified several issues. Some supervisors from the county MCH station do not have a clinical background and are therefore not familiar with obstetrics. They do not use standard assessment tools and sometimes give conflicting advice. In addition, supervisors do not have the authority to enforce any of their suggestions. They identify problems during a visit, but the next year the same problems are there. Examples of this include controlling the CS rate and use of partographs. However, the supervision visits carried out at the county hospitals by the city level

supervisors are seen as useful. They make visits at least once a year where experts assess the notes carefully and give precise feedback, enabling the staff to provide better quality of care.

"Mainly the MCH station supervises us. They check whether we reach five times prenatal checkups and three times postpartum visits rates. If the data are not perfect, we won't get a good year-end assessment. But if I make a perfect record, it is also false. But because year-end assessment is closely related with hospitals' profits, we must make the data up so it is perfect. Even doctors of big hospitals can't complete the perfect task, so how can we? Sometimes they come to our hospital, I tell the truth. In the past, we only modified the rate a bit higher. When the reports were given to them, they said the rates were too low, which would affect the hospital's reputation and asked us to make them higher." IDI2, MCH, T, M, 32years.

"I think the supervisors in the MCH station need to improve their skills. Some supervisors do not have a clinical background. So this is a problem. For instance, different people will give different opinions even opposite opinions. So there is no uniform standard. It affects the quality of supervision." KII2, M, 57years.

"They will do the supervision once every year at the county hospital. They will invite experts from city hospitals to do the supervision. They are very clear about whether your notes are correct and standard. They will look at some indicators and they will give exact direction. This will have a positive effect on the quality of care. Under the experts' direction the doctors will know what the problems are and how to solve them." KII1, M, 45years.

"Some suggestions for improvement will not be carried out. If the management has no effective ways to make doctors change then these changes will not happen. Perhaps this year you find the problems and you will find the same problems next year. We do not have ways to force them to do them. For example, there are no exact indicators for CS. It is very difficult to control the social factors influencing CS. Some doctors think it is troublesome to use the partograph and will not make any changes after supervision." KII1, M, 45years.

7.4.3 Monitoring and improving quality of care

Monitoring quality of care

When asked about how the quality of delivery care is monitored, respondents talked about monitoring quality in general, with little reference to delivery care. They reported a few ways to monitor the quality of care.

The most common methods were the supervision visits from the higher authorities as described in

the section on supervision; and monitoring by the hospital managers. The hospital managers look at the maternity cards assessing the number of antenatal examinations and the timing of the first examination; and check notes and prescriptions. For every complete record, the doctor will receive a bonus. Sometimes, families meet the manager and talk about the care received, usually in the form of complaints, and this feedback is also used to calculate the bonuses. Doctors receiving negative feedback receive a smaller bonus. A few managers said they supervise the obstetric department in the same way as other departments, such as checking staff arrival times and if they work well with others as they do not know about maternal health care. Some health care providers reported that although the managers supervise their work, they are not sure what they are assessing.

One health care provider said she contacted the village family planning workers to find out whether women are satisfied with the care they receive. In the TCM hospital, there is a feedback box where women can place their comments. The managers look at the comments every month, but these are not passed on to the doctors. Some doctors did not know that this box exists.

Some health care providers reported that there is no monitoring of quality. Managers do not do any supervision, as they think that it is the responsibility of the doctors as professionals to do their work well.

The key informants reported that there is very little monitoring of quality of care in the township and county hospitals. To protect against medical accidents, the hospitals focus on making sure that the notes are completed to a certain standard. There is no assessment of delivery care. Hospitals rarely receive feedback from women.

"We supervise each other. We will ask each other for advice when we meet some question, and the manager doesn't supervise us. He thinks that it's our profession and we should do it well. He supervises us by shouting loudly. For example "what are you doing?", "why do you inject her?", "why do you rupture the membrane?" and so on. Furthermore, patients and their family members supervise us." IDI7, Dr, T, F, 33years.

"I often contact the village FP workers to see whether the women are satisfied with me and whether there are any suggestions to improve the quality. We will pay more attention to the service if there is any dissatisfaction. But generally speaking most women show positive attitude towards me. When the women are in hospital they will not say if they are not satisfied. But when they go home they will give their views to relative and other pregnant women. The women in rural areas are mostly "simple". So as long as we treat them with good attitude, with smiling, and no abuse and make the mother and baby safe, then they will have no comments on our service." IDI17, Dr, T, F, 36years.

"Very little monitoring. Each department is responsible for itself. Notes assessment should be done every 3 months, but actually they cannot do this. Who can do this? Which manager will have so much time to organize the staff to do the supervision?" KII2, M, 57years.

Effects of monitoring

Many health care providers thought that monitoring of services is effective at promoting good quality services. They perceived that without any monitoring, staff are lazy. However, most health care providers said that the way they are monitored by their managers is not useful. They reported that managers inspect the maternity cards and make the health care providers add false information so that the hospital does not rank poorly in the county assessment. Although, managers enquire about what health care providers do every month, there are no incentives to work harder.

Most managers reported that the way they monitor their staff is useful. It encourages staff to improve services and reduces medical accidents and is especially important when caring for high risk women. If a medical accident happens or there are complaints, they can punish the doctors. A few managers said that they do not think about praising staff.

Most health care providers and managers thought that feedback from women and families is an important way of monitoring and improving the quality of care. Only negative feedback is discussed, and praise for achievements is rarely done. When women or families complain, hospitals are sued and staff wages are reduced. This helps to improve staff attitudes and standards of care. Health care providers reported that they do not know how to deal with complaints and they provide good care but women misunderstand them.

"Leaders make inquiry every month, but it is not effective. Leaders should set up incentive measures. For instance, commendatory letters from patients is an affirmation of our work. This would be a great motivation to work hard. This should be shown in achievements and salaries." IDI5, MCH, T, F, 36years.

"Now patients have strong awareness of self-protection. If your attitude is not good, they will complain and sue you. We will be asked why. No matter how low our wages are, we have no alternative but to bear that. I think supervision should be stricter. This is a way to make us more responsible towards patients." IDI9, Dr, C, F, 42years.

Targets for quality of care

Most health care providers were unable to say if there are any targets or indicators for quality of maternal health care. However, some said that the hospitals' target is to provide the best services,

have the best skills and environment in the county.

Amongst the managers, there was a range of responses about targets. They include: every woman is satisfied with the care that they receive; the number of medical complaints is zero; provide a clean, tidy and comfortable environment for women; women feel safe; CS and episiotomy rates are within limits set by the Baby Friendly Initiative; and 40% of women in a township area deliver in the township hospital.

The key informants identified indicators for quality: rates of antenatal and postnatal care; maternal and neonatal mortality and morbidity; and successful delivery with no injury or maternal and neonatal death.

"My goal is that everyone can do his work step by step, take great responsibility to do it well, and to satisfy every patient who comes here and medical complaints reduce to zero." IDI8, Man, C, M, 51years.

"The aim is to cut down the two death rates, which are maternal mortality and neonatal mortality." KII2, M, 57years.

Communicating about quality of care

Most health care providers were unable to say if and when they discuss quality of care. On the other hand, the majority of managers reported having meetings with their staff to discuss any difficult cases and emergencies and possible solutions, poor feedback from women, prevention of problems, instructions from higher levels, how to complete documents and which investigations to conduct. In some hospitals, these meetings are held every month, and in others they happen on an irregular basis. However, other managers said quality of care is rarely discussed. A few managers say that they tell doctors to improve quality in order to attract more patients so that the hospital can earn more money.

Some managers reported that they discuss their hospital and its problems with the county health bureau and county government in the hope that they will convey this to the provincial and national governments. They also discuss with county and higher level hospitals about how to deal with women's complaints.

The director of the health bureau reported that he rarely discusses quality of care with the managers but sometimes discusses antenatal care with the doctors. The director of the MCH station discusses quality of care with managers and obstetric doctors. He explains to them what they have done poorly and what problems may arise. He gives feedback to doctors about the maternity cards and other

records and then discusses this with managers.

"If there are complaints, or there are some problems about the quality of our services, we must evaluate it. We have regular evaluation of our doctors every year. This includes peer evaluation and also evaluation by the management. If you are not competent, the wages will decrease. If you are competent, your wage will increase." IDI3, Man, T, M, 54years.

"We discuss with the doctors about possible problems and how to avoid them. We often have this communication and it is effective. I think it is also necessary to communicate with other county hospitals and higher level hospitals and we do this. For example, we can address what women are not satisfied with in our hospital and ask other hospitals what they do. I think this is effective." IDI5, Man, C, F, 41years.

"We sometimes have meetings. Some unfavorable feedback about doctors will come to me and I will ask doctor the reason and give my opinions. It is effective. Doctors must listen to me if they want to stay here". IDI6, Man, T, M, 51years.

Responsibility for quality improvement

There were a variety of views on who is responsible for improving the quality of care. Most respondents thought that health care providers, managers and the government all have responsibilities.

Health care providers considered that although doctors have the main responsibility for improving quality of care through the development of skills and increasing their knowledge, managers and government also play a role. Managers have a responsibility for improving the environment and equipment, limiting the prices of drugs and improving the skills of doctors. The government has an important role in quality improvement through funding maternal health care services. A minority of health care providers thought that women and families have a responsibility for quality improvement. They should know what care they should receive and be able to demand this.

Managers thought that they have a responsibility to: discuss problems with higher levels and ask for their solutions; provide frequent supervision; obtain funding; recruit more staff; lead staff to provide safe care; and improve doctors' skills and attitudes. The government has a responsibility to: develop good policies; solve problems; and increase doctors' income. The doctors have responsibility to provide care to women and ensure the safety of mothers and babies. Some managers identified challenges to their role in improving quality of care: policies should allow doctors to focus on providing care rather than ensuring financial benefits; they have to earn enough income to provide

salaries but at the same time provide safe and good quality care; township hospital managers do not have the authority to change things in their hospital; they do not have the authority to punish the doctors such as suspension from work; they do not have enough funding to improve the hospital environment or equipment.

The key informants thought that the county and provincial government have a major responsibility in improving quality of care as they develop policies on financial allocation and assessment standards. However, hospitals should take responsibility as they are the ones who implement the policies. They perceived their roles as being small: learn about the hospital situations and discuss them with the leaders in the health bureaus.

"The government is sure to play an important role. If government increases investment, the quality of care will surely improve. The amount of both staff and money is so limited that no one is willing to do it. If low-wage conditions cannot be changed, nobody is willing to engage in it." IDI3, Dr, T, F, 40years.

"The leaders of the hospital have part of the responsibility, but I think our doctors should take the key responsibility. So as leaders, we have the responsibility to provide a good service platform, a very good environment for service. I think the major responsibility lies on our clinician as they directly serve the patients." IDI7, Man, C, M, 51years.

"The main responsibility lies with the hospital itself, and the government also has influence. The government only controls the total personnel number for the hospital and the hospital allocates to the departments. If the hospital wants to develop obstetrics, they should provide more staff, and obstetrics will be improved. The county health bureau is responsible for monitoring by setting standards and can punish township hospitals if they do not meet them. Township hospitals hold the main responsibility such as having enough staff and equipment, and if they do this and also get enough government funding, all problems will be solved." KII2, M, 57years.

7.4.4 Baby Friendly Initiative

All health care providers and managers reported hearing about the baby friendly initiative. They said it includes many areas such as encouraging breastfeeding, promoting hospital delivery and numbers and skills of staff. Some thought it also includes aspects of the hospital environment and health education classroom. The doctor from TCM hospital recalled that for a hospital to gain the baby friendly initiative, the newborn baby and pregnant women should remain together, breastfeed within ½hr of delivery and not use milk substitute.

There were a range of perceptions about the process of assessment for the award from the different respondents. Some thought that the county health bureau assesses the hospital every year and if it meets the criteria the certificate will be issued. Others thought that the provincial health bureau or MCH station assesses every few years.

The key informants reported that this was an initiative of the State Ministry of Health in order to improve conditions of the hospitals. The hospitals apply and the county MCH station and health bureau check the hospitals and give them advice about how to be baby friendly. The municipal health bureau assesses the hospital according to the surveillance guidelines for baby friendly hospital of Anhui. If they are awarded baby friendly status, then the county health bureau and MCH station supervises them 4 times per year. If they fail to meet the standards, their baby friendly initiative award is removed. Figure 7.3 describes the regulations for the initiative and the status of the facilities within the study county.

This study suggests that although most of the hospitals have been designated "Baby Friendly" status, they do not meet all the requirements. Most notable omissions include early breastfeeding, exclusive breastfeeding, use of partograph to monitor labour, toilet in obstetric department, and lack of equipment such as weighing scales and neonatal ambubag.

"There are many articles, but it has been many years, and I do not remember very well. But they have a guiding role, for example, newborns and pregnant women should be together, and early breastfeeding within half an hour, and no milk substitute." IDI20, Dr, C, F, 45years.

"I couldn't remember it clearly. The county or province health bureau or MCH station do the assessment. Maybe once every several years. I can't remember what they assess. Perhaps school of pregnancy, health education, sterile method of birth, advising breast feeding, drugs, so many things." IDI18, Dr, T, F, 60years.

Figure 7.3: Summary of Baby Friendly Initiative regulations and status

Policy: Regulations for Baby Friendly Hospitals	
Health education • Promote successful breastfeeding by putting posters and rules in hospital, health education • Breastfeeding hotline to provide counselling and solve problems after discharge	
Keeping mother and baby together • Mother and baby should remain together for entire 24 hours per day • Promote early breastfeeding and touch	
Facility • Obstetric clinic: health education room and examination room with sink • Obstetric inpatient department: should have separate labour ward (including labour room, hand washing and sterilisation room, delivery room), treatment room, mother-infant room, lavatory and doctor's office. The delivery room should be no less than 15 square meters, with tiled or painted walls and concrete sloping floor. Doors and windows should be tight and also have netting. There should be ultraviolet lights and air conditioner or heater. • Mother-infant room: 6 square meters per bed area.	
Equipment • Obstetric clinic: diagnostic bed, instrument table, table and chair, gynaecological examination table, blood pressure gauge, scales, thermometer, stethoscope, pinard's stethoscope, soft ruler, external pelvic meter; waiting chairs in waiting area • Mother-infant room: bed, bedside table, chairs, flasks, sterile basins, cot • Delivery room: delivery bed, delivery pack, infant scales, blood pressure gauge, stethoscope, pinard's stethoscope, low pressure suction pump, neonatal ambu bag, oxygen cylinder, first-aid box, instrument table, light, heater, clock, dust bin • Additional equipment needed: high pressure sterilising device, ultrasound device, ECG and X-ray	

Staff
• Qualifications: delivery assistants must hold graduation certificate of middle medical school or above and have delivery license; leader of obstetric department should have 3 years or more obstetric experience, be a doctor and have a delivery license
• Skills: identify and manage high risk pregnancies; monitor labour using partograph; use apgar score; conduct deliveries including breech deliveries; perform manual removal of placenta; perform episiotomy and suturing; neonatal resuscitation; manage mild to moderate pregnancy induced hypertension syndrome; manage postpartum haemorrhage
• Training: obstetric and paediatric staff should have 18 hours training on breastfeeding; other staff should have at least 3 hours training
• Conduct delivery:
  • Monitor labour and identify prolonged labour
  • Ensure correct sterilisation of equipment and environment
  • Prevent delivery injury; prevent and manage postpartum haemorrhage
  • Closely observe foetal heart; clean newborn's respiratory tract after delivery; keep newborn warm and encourage feeding
  • Two medical staff should be present during delivery.
  • Preparation for referral should be made for all deliveries
  • Complete all records	

Baby friendly hospitals Fanyang, **Heng Shan, Gao An, Di Gang,** Lun An, Xingang, **Ping Pu**, Xinlin, **Chi Sha**	**Hospitals without status** **Sun Cun**, E Shan, Huang Hu, Mabei

7.5 Conclusion

This chapter presents findings from interviews with health care providers, managers and key informants and analysis of county level policy documents to illustrate the factors affecting the quality of delivery care. In Table 7.4, the key findings are summarised.

Table 7.4: Summary of perceptions of providers, managers and key informants of quality of care

Definition of quality of care	• Assure the safety of mother and baby • Able to communicate well / good attitude to women • Good skills
Ideal delivery	• NVD • CS to generate income and avoid disputes • Mixed views about presence of relatives at delivery • Lithotomy position • County hospital (providers) and township hospital (managers) • Clean, quiet and comfortable environment • Manage labour pain through talking with and supporting women
Ideal birth attendant	• Experience of doing deliveries and CS • Able to monitor labour and manage complications • Work in an ethical manner • Good attitude • Doctors, assistant doctors and midwives with delivery licenses
Human resources	• Shortage of staff: difficulties in retention and recruitment • Takes time to ensure new graduates have enough experience and license before doing deliveries • Limited experience in township hospitals • Incentives to provide investigations and CS • In-service training does not develop skills
Equipment	• Most basic equipment is available • Some old equipment • Neonatal care equipment lacking
Drugs	• Drug supply is generally adequate
Environment	• Facilities have improved • No bathrooms or toilets in delivery rooms • Limited space in some facilities
Supervision	• Frequent supervision focuses on maternity card completion • Not supportive – punitive measures to enforce provision of services
Monitoring	• No targets and indicators for quality of delivery care • Monitor institutional delivery rate and CS rate • Only negative feedback from women • Medical disputes are increasing - limited support for providers
Baby Friendly Initiative	• Promote environment of labour and delivery rooms
Evidence-based care	• Poor understanding of EBC • Limited use of guidelines

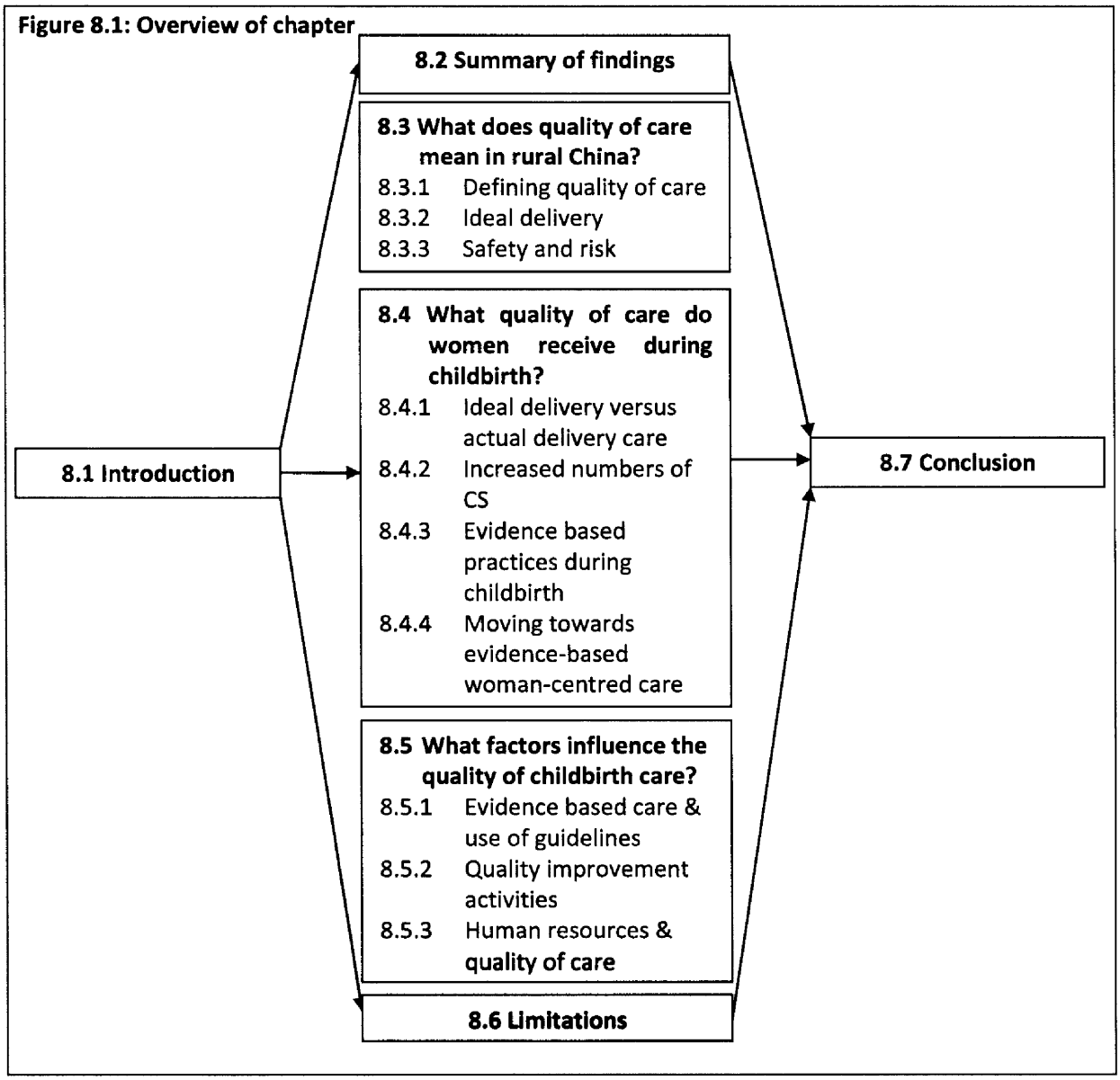
Chapter 8: Discussion

8.1 Introduction

This chapter first summarises the key findings from the study. These key findings are then discussed in three sections answering the research questions posed: What does quality of care in maternal health mean in rural China? What quality of care do women receive during childbirth in hospitals? What factors influence the quality of childbirth care?

Some of the methodological and data quality issues that relate to the trustworthiness of the findings are then discussed. Finally there is a summary of the key discussion points. Figure 8.1 gives an overview of the chapter.

Figure 8.1: Overview of chapter



8.2 Summary of findings

Women, mothers, health care providers and key informants defined quality of care. They identified the importance of safety of care resulting in a healthy mother and baby, as the principal aspect of quality of care. Other common elements of quality were the ability of health care providers to communicate with women and families and health care providers being skilled. However there were some differences as women placed importance on the environment being clean and comfortable; equipment being available in the delivery room; and being provided with information so that they are prepared for childbirth. Health care providers and managers emphasised the importance of providing care according to laws and guidelines, whilst managers also focused on the ability to identify high risk women. Key informants explained that quality of care was dependant on having enough skilled staff; and saw quality of care as a key characteristic of continuum of care from antenatal, delivery and postnatal care.

In this study NVD was seen as the ideal delivery by the majority of respondents. Health care providers and managers supported NVD but were also concerned about disputes between families and facilities, and so accepted that women should choose their own mode of delivery. Perceptions of safety came into the choice of place of delivery and attendant, with most women opting for delivering at a county level hospital and with a doctor as this level is seen to have more equipment with better skilled providers who are able to manage complications. Older age, experience in conducting deliveries and CS, good skills, able to comfort and relieve pain, treat with respect, able to promote normal delivery but also identify when CS is necessary were considered to be important attributes of a birth attendant.

Data from the various sources indicate that the dominant approach to childbirth in rural China is that of medicalisation. Practices such as episiotomy, administration of intravenous infusions and antibiotics, rectal examinations and supine or lithotomy position for delivery, as well as a high CS rate, were commonplace. On the other hand, practices which are known to be beneficial, such as partograph, use of pain relief, social support during labour and delivery were not routinely carried out.

Some aspects of the ideal delivery as described by women in this study were met in their experiences of delivery care. These included having a NVD, the skills of the providers being good, and being satisfied with the level of privacy. However other aspects were not met. The majority of women delivered in township hospitals as opposed to delivering in county or higher level facilities. Only women delivering in township hospitals were allowed relatives to be present in the delivery room. Most hospitals were perceived as dirty and noisy. Women in the township hospitals received

support from health care providers to manage the pain, whereas women in the county level facilities had little support. Most women lacked understanding of the consent form, the care that was being provided and were not involved in decision making.

The records assessment clearly showed that the CS rate is very high in this county. This is supported by the narratives of the health care providers, managers and key informants. Amongst the common reasons for women and families choosing CS in this study are perceptions that CS is less painful than labour and normal delivery and it is safer for mother and baby. There are several provider factors affecting the CS rate. Providers and managers perceived that it is difficult to monitor progress of labour and CS is quick and easy to perform. Complications are seen as more likely to happen with normal deliveries resulting in medical disputes and loss of earnings.

There are challenges to creating an enabling environment for the provision of good quality delivery care. Lack of guidelines and protocols within facilities, as well as little understanding of the concept of evidence-based care was evident in this study. Supervision of health care providers by the county MCH hospital and health bureau concentrated on the completion of records and the antenatal and postnatal care rates. Other methods, such as using feedback from women and families, staff meetings to discuss issues within the facilities were evident but were not frequently or widely carried out. Maternal and perinatal death audits, and criterion or standards based audits were not carried out in any of the facilities.

This study identified several challenges with regard to human resources and skilled birth attendance. There is a shortage of skilled staff in the facilities to care for women in labour and conduct deliveries resulting from difficulties in recruitment and retention. Pre-service training does not generally provide doctors and midwives with the necessary skills to care for women during labour and delivery, and they therefore require more training and support from experienced staff. In addition, current methods of in-service training do not further develop the skills of doctors and midwives.

8.3 What does quality of care in maternal health mean in rural China?

8.3.1 Defining quality of care

It is important to understand how the different people involved in maternal and newborn health perceive quality of care. If we do not consider all perspectives then we may miss important aspects of quality, and without this understanding it is difficult to improve the quality of care. According to Lincoln and Guba (1985) the world is constructed from multiple and competing versions of the truth and realities and ways of understanding are socially constructed in interactions with the contexts within which they occur. Strategies for improvement of quality of care should recognise and engage

stakeholders with different perspectives so that their experiences and perspectives are understood and used in planning and implementing strategies.

Women, mothers, health care providers, managers and key informants were able to define quality of care in their own words. The results of this study show that there are similarities in how the majority of different types of stakeholders viewed quality of care. These include safe childbirth with no maternal or foetal deaths; health care providers able to communicate with women and families; and good skills of health care providers. Table 8.1 gives a summary of the majority views on quality, classified using the systems and perspectives model. The aspect of safety and childbirth is discussed in more detail later in this section.

However there are also differences of point of view among the stakeholders. Women focused on the environment of the delivery room and provision of information. Health care providers and managers placed more importance on laws and guidelines including the identification of "high risk" women.

These differences are not surprising. Women are perhaps more likely to place importance on the environment as this has implications for both comfort and safety. These are aspects that they can easily evaluate and have a direct impact on them during their time in the facility. On the other hand, healthcare providers and managers perceive quality of care as conforming to external regulations, which is perhaps linked to the methods of supervision and monitoring employed in China. Supervision and monitoring is discussed in sections 8.4.2 and 8.4.3.

Table 8.1: Summary of majority views on defining quality of care using the perspectives and system models of quality

	Women	Mothers	Health care providers	Managers	Key informants
Structure	• Equipment available in delivery room • Clean and comfortable rooms	• Clean and tidy environment	• Sophisticated equipment • Environment should be clean and good	• Have necessary equipment for delivery	• Enough staff to provide care
Process	• Health care providers are able to communicate • Knowledge to be prepared for childbirth	• Health care providers are able to communicate • Health care providers are skilled • Responsible attitude; fulfill their professional duties	• Able to communicate well: comfort; relieve anxiety and fear • Able to: manage labour pain; observe labour and delivery • Give care according to laws and guidelines	• Able to communicate well; reassure women about safety • Good skills of providers • Provide care according to guidelines • Able to identify high risk women	• Attitude of staff • Skills of staff • Package of antenatal, delivery and postnatal care
Outcome	• Safety of mother and baby; healthy mother and baby	• Safety of mother and baby	• Assure safety of mother and baby	• Assure safety of mother and baby	• Assure safety of mother and baby; prevent deaths

8.3.2 Ideal delivery

Another way of defining quality of care is to ask clients, providers and managers to describe "the ideal delivery" including the "ideal birth attendant". This can highlight what is important to women, mothers, health care providers and managers in delivery care and the attendant.

Little is reported in the Chinese literature about the "ideal delivery" and "ideal birth attendant", so this study offers unique insights into this area. A NVD was seen as the ideal delivery by the majority of respondents. Health care providers and managers accepted that women should choose their own mode of delivery with the two main modes available for choice being NVD and CS. Delivering in a county level hospital with a doctor was seen as the safest option. A skilled birth attendant was described as an older professional with good skills, who can conduct both NVD and CS, can relieve pain and treat women respectfully.

Other studies have looked at women's perceptions of the "ideal delivery" and "ideal birth attendant". In a study by El Nemer et al. (2006), women were interviewed about their experiences of birth care in Egyptian hospitals, and asked about their preferred way of birth. Many wanted to deliver at home with dayas, where the approach was reported to be calm and caring and their needs responded to and met. These women emphasised the benefits of family support, with mothers in particular providing knowledge, practical support such as food and drink, and advice such as mobilisation. Support from relatives has been highlighted as a valuable aspect of care in other studies (Ip et al. 2003; Kao et al. 2004; Wild et al. 2010). Although, this study also identified support from relatives to be important, in contrast most women wished to deliver in a higher level hospital where safety could be ensured through more skilled health care providers and better equipment. Participation in decision making (Kao et al. 2004; Oweis and Abushaikha et al. 2004) and a safe and comfortable environment were also identified as important factors in other studies in Taiwan, Jordan, Ghana and Timor-Leste (D'Ambruoso et al. 2005; Wild et al 2010). Being treated with respect was identified as an attribute of the ideal delivery with health care providers explaining and discussing care as well as asking for consent being part of this. In other studies, women expected labour to be painful, but most did not expect to have pain relief apart from support from relatives and health care providers (Oweis and Abushaikha et al. 2004; Ibach et al. 2007; Sercekus and Okumus 2009). This is in keeping with the findings from this study.

8.3.3 Safety and risk

The theme of safety surrounding delivery appears time and time again and throughout the narratives of women, mothers, health care providers, managers and key informants in this study. It appears to be one of the most important aspects of quality.

But what does safety mean for the respondents in this study? Safe childbirth should result in a healthy mother and baby, with no complications, morbidities and mortalities. However, along with this emphasis on quality is a willingness to do some "trade offs". Women and families perceive that if the woman is healthy and the investigations such as ultrasound show that everything is "normal", then she can choose the type and place of delivery. Health care providers, managers and policy makers use the risk assessment approach whereby, any woman who is considered "at risk" will require different care and deliver at a higher level than women perceived as being without risk.

There was some debate among the stakeholders in this study regarding whether safety can or cannot be assured during NVD. Safety relies upon the ability and confidence of health care providers to identify high risk women, monitor labour, identify problems and then manage them effectively. This study has shown that key informants, managers, some health care providers and women have little confidence in health care providers managing complications. The position of health care providers and managers to defend their actions when complications occur is weak with little support from the higher levels of the health system to protect individuals and facilities from disputes and having to pay compensations. Health care providers are therefore reluctant to risk complications happening. In addition, there is an even greater fear of maternal and perinatal death occurring in their facilities. As a result, the confidence, abilities and willingness of health care providers to promote and conduct NVDs are affected. There is a perception that ultimate safety is provided by doing a CS. There are no other alternatives but CS, so if providers are seen to do this, then they have done all that they could have done.

The literature surrounding approaches to delivery care have identified the concepts of risks and safety as important. Since the late 20th century, the dominant cultural paradigm for childbirth across the world has been risk averse, surveillant and technocratic (Davis-Floyd 1994; Walsh et al. 2004). Routine antenatal care has largely entailed screening or risk prediction exercises deemed necessary to predict pregnancy outcome and prevent medical problems that might be avoided by appropriate prophylactic measures and treatment of conditions (Lindmark 1992). With the development of technology such as ultrasound scans, health professionals are now able to see the foetus, and a major concern is the size, position and condition of the baby (Oakley 1980; Barker 1998; Tautz et al. 2000). These developments have influenced the perception of pregnancy and childbirth from being a

natural process to a medicalised one which requires specialist and technical care. The principle that a no-risk birth can be achieved by having all women undergo a risk monitoring process provided as a package for all pregnant women was initially adopted (Mathole et al. 2004). The main justification for hospitalisation for childbirth across the world has been that birth is safer if it takes place in health facilities, where emergency obstetric care is available. Despite this reasoning being questioned, and the concept of skilled birth attendance rather than place of delivery being promoted, it continues to be the overriding rationale used by governments, health professionals and women themselves (WHO 2004a; WHO 2005a).

However there are problems with this risk approach (Enkin et al. 2000; WHO 2005a). First, the risk systems result in a large number of women being categorised as "at risk" with an associated risk of having a high level of intervention in the birth. Second, the risk approach, despite careful categorisation, fails to identify many of the women who will need care for complications in childbirth. Third, many women identified as "high risk" go on to have a normal uneventful births. This has led to a change in thinking about the role of antenatal care and the use of risk identification in the UK and other countries (Carroli et al. 2001; WHO 2005a; Campbell and Graham 2006).

The "risk approach" was found to be the main approach in China in this study. Much emphasis is placed during the monitoring visits on the completion of the "high risk" books in each facility, and the adherence to the process of identifying high risk women. On the other hand, the concept of emergency obstetric care for women with complications and the ability of facilities to be able to provide this type of care to women only when they need it, is little understood, let alone practiced.

Using the "risk approach" for all women and poor understanding and no use of the concept of emergency obstetric care has important implications for quality improvement in China. There needs to be a shift away from the traditional view of the "risk approach" which will mean changes in medical and midwifery curricula, and revisions to the widely used obstetric textbook. Introduction and acceptance of the concept of emergency obstetric where health care providers are able to manage women with complications, whether it is basic management and referral or more comprehensive management, will take time. It will require a change in policy, and careful monitoring of the availability and quality of services.

8.4 What quality of care do women receive during childbirth in hospitals?

8.4.1 Ideal delivery care versus actual delivery care

This study for the first time compares expectations with experiences of delivery care in rural China. Expectations such as having an NVD, skilled providers and privacy during childbirth were met. Other

aspects were not met including place of delivery, companionship during labour, pain relief, cleanliness of the environment, and being involved in decision making.

Studies in Lebanon, Egypt and Taiwan have shown similar inconsistencies between women's birth experiences and their preferred way of delivery (Kabakian Khasholian et al. 2000; El Nemer et al. 2006; Kuo et al. 2010). Routine use of interventions such as oxytocin to accelerate the first stage of labour, perineal shaving, enemas, lithotomy position for delivery were widely practiced in these settings, and not necessarily meeting women's expectations (ibid). Lack of consent, privacy and companionship during labour were also apparent.

Globally, there has been a consensus that maternity services should take women's individual needs into account and offer greater choices (World Health Organization 2005b). A discussion of care including its advantages and disadvantages, can allow women to make an informed decision about their care. However, many women do not have an active role in decision making during childbirth (Kabakian Khasholian et al. 2000; Miller et al. 2003; El Nemer et al. 2006). In a study of women's experiences of childbirth in the Lebanon, most women reported not having the opportunity to ask questions and receive clear answers, have their decision-making rights respected, and have the chance to express their concerns (Kabakian Khasholian et al. 2000). Interventions were undertaken with no attempt to provide informed choice in a study in Egypt (El Nemer et al. 2006). A study in Taiwan explored women's views on midwifery care and found that women wanted to be informed and wished to be involved in decision-making (Kuo et al. 2010). They wished to have control over the childbirth process and, under midwifery care, had positive childbirth experiences and satisfaction as these expectations were realised. Midwives answered women's questions without judgement, while providing various options, and respected women's decisions (Kuo et al. 2010).

So what are the implications when aspects of the ideal delivery are not being met? First, the reproductive health rights of women may not be met. Rights-based approaches to improving health systems and services have generally focused on women's access to and use of quality maternal health care services (Hawkins et al. 2005). However, rights based approaches should be more than this. As Freedman suggests we should look at the applicability of rights in layers (Freedman 2001). At the most general layer, the fulfillment of human rights means 24 hour readiness: availability of the necessary human resources, facilities, equipment and drugs, and the ability to mobilise these when needed. At the next level, is how those services are delivered; with a focus on human dignity and non-discrimination, and the interactions between people. By not allowing choice, control, and participation in decision making, women's rights are essentially being ignored. In this study, the informed consent process appears to be lacking, with women or their families giving consent to

procedures in hospital without being given information or not understanding the information being given. This is not surprising, given the concept of individual informed concept in China as outlined in the methodology section 4.8.8. Using a rights-based approach involves working with community and women's associations to advocate their rights be respected and protected, while also working with government and service providers to increase their capacity to uphold their obligation to provide health services of the highest possible quality (Freedman 2001). There are examples where women's views are heard and taken into account in the development of services. For example, Royal College of Obstetricians in the UK uses consumer input to develop clinical guidelines; and in the Cochrane Collaboration, every Cochrane Review Group has members who will represent the consumer viewpoint in deciding which reviews are done, the questions on which they focus, and how the results are presented.

Second, if women are not satisfied with the care they received, this may inhibit them from using these services again, and opting for either home delivery, unattended delivery or services at higher level facilities. Both options have implications. Not using services in facilities for delivery care may result in unsafe delivery and risks of morbidity and mortality for both mother and baby. Using services at higher level facilities raises issues of costs, transport (Long et al. 2010) and increased and perhaps unnecessary medicalisation. Families may borrow money, sell assets, or put themselves into debt to pay for these higher costs (Harris et al. 2007). These implications are not evident in China alone but are common in middle-income countries, countries in transition and some low-income countries, such as such as India, Vietnam, Cambodia (Ranson 2002; Xu et al. 2003). Maternal care can often be expensive, absorbing a substantial fraction of a household's disposable income at a time when income-generating capability is low (Ensor and Ronoh 2005). Care during complications is uncertain, making it difficult for households to plan for the financial consequences. Policies in China, however, create a unique environment. The family planning policy promotes one or in some instances two children per family, and therefore the need of future usage of services may not be such an issue for some women. In Anhui province, and other provinces, delivery at home is strongly discouraged, with punitive measures in place such as difficulty obtaining a birth certificate for home deliveries and withdrawal of funds to hospitals in whose catchment areas home deliveries have happened.

Third, women may also talk about their experiences with other women and families and influence their decision to use the facilities. Fourth, in this study, it is clear that women and families, to some extent, accept the level of care that they received. There is a stoicism that this is the kind of care that is to be expected in rural China, with better quality of care only being provided in higher level

facilities and with increased costs. Finally, the motivation of health care providers to provide good quality of care may be reduced when women and families are not satisfied with the care that they provided. It is generally accepted that professionals are motivated by the satisfaction of doing their jobs well (Witter et al. 2011). A study by Fort and Voltero (2004) showed that receiving recognition from the employer, client or community can become powerful motivators to enhance performance.

8.4.2 Increased numbers of CS

It is clear from the narratives that the numbers of CS are perceived to have risen over the last few years in this county. The facility CS rate derived from the delivery registers indicates that it is 62% in the county, 63% in the county level facilities and 60% in the township level facilities. These rates far exceed the rates prescribed by the county policy of below 20% in township level hospitals and below 30% in county level hospitals, and are among the highest in the world.

CS is needed to prevent or treat life-threatening maternal or foetal complications (WHO 1994a; WHO 2009). Globally there are great inconsistencies in the availability and use of CS with inability to meet these minimum coverage levels in many low to middle income countries and increasing concern about rising CS rates in other areas. This was recently highlighted in surveys from Asia and Latin America (Langar and Villar 2002; Villar et al. 2006; Lumbiganon et al. 2010). Of 60 medium and high income countries, the majority (62%) had national rates of CS above 15% (Althabe et al. 2006). In some developing countries, even higher rates have been found; for example, in Brazil and Mexico the national averages were 37% and 39% respectively (Betrán et al. 2007). On average, the nationwide rates in less and least developed countries have varied between 0.4% and 41% (Betrán et al. 2007). For Asia the overall CS rate was estimated to be 27% with the highest estimate for China at 46% (Lumbiganon et al. 2010). Analysis of three nationwide representative surveys indicated that the population based CS rate increased from 1% in 1991 to 26% in 2007 in rural China (Long et al. 2010). The authors concluded that the increase of CS in all subgroups of women (different ages, occupations, income levels, education levels) and the speed of change will lead to very high CS rates in rural China in the near future. A study in three Chinese provinces indicated increases in CS from 2004 to 2007 to reach extremely high levels of 19%, 44% and 60% (Bogg et al. 2010). A large population-based study from urban China showed high and increasing CS rates from 18% in 1990-1992 to 40% in 1998-2002 (Tang et al. 2006). Smaller local studies from cities have found similar increasing trends from 5% in the late 1980's to 30% late 1990's (Cai et al. 1998; Wu 2000; Leung et al. 2001; Hong 2007).

Historically, most deliveries by CS occurred because of identified obstetric or foetal complications or medical illness. It is noteworthy that in particular rates of elective CS with no absolute medical or

obstetric indication have risen globally. Many factors have influenced this change in practice internationally including increasing consumer awareness and expectation; fear of intrauterine death, brain injury and pelvic floor damage associated with vaginal delivery; increased safety of elective CS with improved anaesthetic and surgical care including prophylactic antibiotics; fear of litigation; beliefs requiring a specific day and time for childbirth; and consideration of financial benefits (Behague et al. 2002; Mishra and Ramahathan 2002; Lei et al. 2003; Habiba et al. 2006; Waldenstrom et al. 2006; Taljaard et al. 2009; Lumbiganon et al. 2010).

Women and families in China could either choose to have CS or were advised by health care providers to deliver in this way. Amongst the common reasons for women and families choosing CS in this study are perceptions that CS is less painful than NVD, which is linked to the evidence from this study of the lack of pain relief in NVD; and it is safer for mother and baby. This is in agreement with other international studies, which have found that fear of childbirth including fear of pain, death, maternal and foetal injury, are key factors resulting in women's requests for CS (Wax et al. 2004; Waldenstrom et al. 2006; Rouhe et al. 2009). Nulliparous women had higher scores for fear of childbirth than parous women and scores were higher in later pregnancy (Rouhe et al. 2009). Previous delivery experiences also had a great impact on the amount of fear (Rouhe et al. 2009). A study in Brazil found that a vaginal birth was considered a risky and negative experience, whereas CS was regarded to represent the best quality of care (Béhague et al. 2002). The authors concluded that fear of vaginal delivery was not simply because of poor information on how to prepare for a vaginal birth but related to patient perceptions that the quality and safety of care during labour and vaginal delivery was poor (Béhague et al. 2002).

A variety of social, medical and provider factors associated with the increasing rates of CS were identified in this study. Social factors included the wish to choose "an auspicious day and time". This has been found in other studies (Lei et al. 2003). Perceived medical factors include: tubal ligation can be done at the same time as the CS; abnormal position of the baby; the umbilical cord is around the baby's neck; large baby; and mother is aged over 30 years.

Several provider factors were identified. Providers and managers perceived that it is difficult to monitor progress of labour and CS is quick to perform. Complications are seen as more likely to happen with NVDs resulting in medical disputes and loss of earnings. There are few doctors who can conduct NVDs confidently, and the midwives' role is eroding (this will be discussed in section 8.5.4). Providers may not be skilled at identifying women who can have NVDs and when to intervene with CS. These factors have also been suggested as reasons for increased CS rates in other studies (Tang et al. 2006; Klemetti et al. 2010a) but have not been identified from the perspective of providers and

managers. In addition respondents in this study stated that revenue for the hospital can be generated through provision of CS. Since the income of doctors is related to the flow of revenue to the hospital through bonus systems, there are incentives for supply-induced demand for more services and more expensive procedures (Bogg et al. 2002).

It was also perceived by health care providers and managers that women will choose CS when they know that the baby is male. Gender difference in choice of delivery is related to an Asian cultural preference for sons. This form of gender discrimination could lead to more CS prompted by increased concern over a baby boy's health and more superstitious vested interest in the boy being born on a lucky day (Liu et al. 2007). Ultrasound examinations are a routine part of antenatal care in China. Most women use such screening services and often know the gender of their babies before delivery. Since it is a cultural characteristic for parents to want to know the infant gender, the use of ultrasound examinations may lead to increased requests for CS for baby boys. Few studies have looked at the preference of CS and gender of babies, but where it has been studied, no consistency was noted. In a study examining factors that may contribute to the high incidence of CS in Taiwan, preference for CS was not significantly different between male and female infants (Hsu et al. 2008).

However Liu et al. (2007) found that Taiwanese women pregnant with baby boys were more likely than those with baby girls to have CS.

Implications of rising CS rates

There are several important implications of high and increasing CS rates. First, increasing CS rates do not necessarily lead to improved outcomes and may be associated with increased risk of maternal mortality, hysterectomy, blood transfusion, admission to intensive care, haemorrhage, infection, ureteral tract injury, neonatal respiratory morbidity and placenta praevia and uterine rupture in future pregnancies (Beliza'n et al. 2006; Villar et al. 2006; Villar et al. 2007). In addition, studies have shown that initiation and duration of breastfeeding can be affected by CS delivery. Both elective and emergency CS is associated with a decreased rate of breastfeeding at various time points following delivery – 7 days, 1 month, 3 months, 6 months and 12 months when compared with vaginal delivery (Liu et al. 1999; Liao 2000; Gui 2002; Wang et al. 2006; Qiu et al.2008; Zanardo et al. 2010). Lack of preparation for breastfeeding after CS, little support from hospital staff and difficulties in breastfeeding during the important hours following delivery, may explain this association (Zanardo et al. 2010).

Second, CS certainly has implications for subsequent pregnancies and mode of delivery. Although, the "one child, one family" policy is applied throughout China, generally, families in rural China can

apply for permission from the Family Planning Commission for another child after three or four years if the first-born is a girl (Klemetti et al. 2010b). The national household health survey in 2007 indicated that 47% of women were multiparous (Long et al. 2011).

Third, the costs of CS for women and families are greater than for NVDs. Despite economic growth in China and increased incomes amongst rural families, these costs may be too great for some families, resulting in poverty, going into debt, and selling assets. In a study by Long et al. (2010) investigating changes in the expenditure of giving birth in health-care facilities in rural China during 1998–2007, out-of-pocket expenditure for facility-based delivery as a percentage of annual household income decreased during the study period, mainly because rural household incomes increased (Long et al. 2010). However, in 2007, expenditure on facility-based delivery equalled 13% of the mean annual income of low-income households. The burden was even higher for women from low-income households who had a CS, since one-third of the mean annual household income had to be spent on the delivery. This is a heavy financial burden on families, as it is above the 10% of annual household income that often serves as the threshold for catastrophic health care spending (Ranson 2002). Families are at great risk of health-care induced poverty (Xu et al. 2003) and delivery care for the poorest households has become less affordable.

Fourth, increasing CS rates can be considered a resource drain for facilities especially where resources are scarce. Costs include human resources such as theatre and anaesthetic staff, use of operating theatre facilities, use of anaesthesia, length of hospital stay, drugs, investigations, equipment and materials. Much of this can be recouped through fees charged to women, but not all will be covered. This is not acceptable when CS is not necessary, especially in a resource poor setting.

Fifth, with any skill, the less you use it, the less skilled and confident you become, with labour and delivery care being no exception. The skills of the doctors and midwives to monitor the progress of labour as well as the conditions of the mother and foetus during labour will deteriorate. Their ability to interpret the findings and act appropriately may diminish. This will mean that any observation deviating from "normal" will be acted upon, whereas, in some cases the practice of observing carefully or expectant management may be enough. Their confidence to support normal labour, to argue/ negotiate for waiting and observing during labour with families may be affected. Health care provider's fear of complications and lack of exposure to managing complications are other factors that may affect their ability and willingness to manage labour and delivery and therefore resort to CS. These interplaying factors will almost inevitably result in even more CS. Other literature has shown that management including monitoring of labour, delivery and the immediate postnatal

period are poorly done, and providers are not confident at dealing with complications (Ministry of Health et al. 2006; Gao and Barclay 2010).

Finally, as CS rates increase, the perception that CS is the norm for delivery will become dominant amongst women, families as well as with health professionals. This will have serious repercussions for the quality of NVD care. Increased CS rate is an important example of the medicalisation of childbirth, other examples are discussed in the following section.

8.4.3 Evidence-based practices during childbirth: medicalisation of childbirth versus woman-centred care

Although labour and delivery care varied across the different facilities and providers, there is evidence that the dominant approach to childbirth in rural China is that of technology and medicalisation. This will be discussed with regard to place of delivery and delivery practices that were routinely carried out which are considered to be not evidence-based, and not necessarily of benefit to women. Such practices in particular included rectal examinations, frequent use of episiotomy, frequent use of intravenous fluids and oxytocin in the 1st stage of labour, widespread use of antibiotics, investigations at the start of labour and supine position for delivery. Practices which are not followed although they are recognised as beneficial will then be discussed, including companionship during labour, use of the partograph and pain relief during labour. Conversely, this study also showed that there are attempts being made to provide more woman-centred care, which include choosing type of delivery, continuous support from township hospital staff and no routine use of enemas.

The medicalisation of childbirth: place of delivery and practices conducted

- *Place of delivery*

In an attempt to improve health outcomes for both women and babies, the post reform Chinese Government has pursued a goal of encouraging facility based delivery (Government of China 2002). This is emphasised by the fact that the number of women giving birth at a health-care facility is used as a target indicator for measuring progress towards improved maternal health by the Government of China (2005) and Millennium Development Goal 5 (Ministry of Foreign Affairs, China and United Nations System 2010).

The policy of facility based delivery was introduced in China in 1995, and appears to be adhered to in the study county. In a survey of women who had delivered in the past year in two counties in Anhui (including the study county), 38% of women reported delivering in the county or higher level

facilities, 62% reported delivering in the township level facilities and no women reported having a home delivery (Klemetti et al. 2010c). Similar rates were found in two other provinces: in Chongqing and Shaan'xi, home delivery rates were 1% and 1.5% respectively. In Chongqing 40% of women reported delivering in county or higher level facilities and 58% delivered in township level facilities. In Shaan'xi more women reported delivering in the county level facilities (74%) with 24% delivering in the township facilities (ibid). Analysis of the Chinese national household survey, showed that the percentage of women who gave birth outside a health-care facility declined rapidly from 45% in 1998 to 10% in 2007, with most of these deliveries occurring at home because of speed of labour and financial reasons (Long et al. 2011). The proportion of women who gave birth in a township hospital remained the same over the study period, but the proportion who delivered at a county or higher-level hospital increased dramatically from 28% in 1998 to 60% in 2007 (ibid).

In this study, several mechanisms to promote facility based delivery were identified: difficulties were perceived by women and also providers for women to obtain birth certificates for babies born outside facilities, although this was not supported in the key informant interviews; there are difficulties receiving NCMS insurance reimbursements for facility based delivery and government subsidies for facility based delivery from the People's Livelihood project; and financial penalties for county health bureau as well as for health care facilities when home delivery occurs.

There is an assumption amongst women and health care providers that delivery in facilities is safer and of better quality. But is this really the case for all women whether they are low risk and without any complications? Planned hospital birth may increase unnecessary interventions and complications without any benefit for low-risk women. A systematic review (Olsen 1997) of observational studies of home birth concluded that there is no strong evidence in favour of a planned hospital birth for selected and assisted low-risk pregnant women. A Cochrane review that looked at home and hospital birth included only one study but concluded that there is no strong evidence to favour either home or hospital birth for selected, low-risk pregnant women. It concluded that in countries and areas where it is possible to establish a home birth service backed up by a modern hospital system, all low-risk pregnant women should be offered the possibility of considering a planned home birth and they should be informed about the quality of the available evidence to guide their choice (Olsen and Jewell 1998). It is not suggested that a home birth service should be introduced in China, but women should be able to make an informed decision about where and how they would like to give birth as part of a right based approach to childbirth and not be penalized for having a home delivery.

- *Rectal examinations*

In this study many women underwent rectal examinations to assess the progress of labour. Some women received both rectal and vaginal examinations. The reasons given for using rectal examinations as a way of assessment were that it was perceived to prevent infections and it is a long standing routine practice. Other studies have shown similar use of this practice, however they do not give providers' rationale. Xu et al. (2001) compared practice against evidence-based standards in 3 hospitals in Shanghai and 1 hospital in Jiangsu province through exit interviews with women and verified practice using hospital notes. They found that rectal examinations were performed in 70% of women, with rates of above 95% in three of the hospitals. Harris et al. (2009) found that rectal examinations were conducted in the facilities which they assessed in Shanxi and Sichuan province, and were more commonly practised by midwives than doctors.

The practice of rectal examination during labour is not recommended (WHO 1996). Studies comparing vaginal and rectal examinations showed a similar incidence of puerperal infection (Crowther et al. 1989). There is no evidence that rectal examinations are currently being done in other countries. This highlights China's adherence to outdated practices and limited use of evidence-based care.

This practice raises several issues. First, it is difficult to accurately assess cervical dilatation using rectal examinations and therefore it is difficult to monitor the progress of labour and identify when labour is prolonged and intervention is needed. Second, rectal examinations are likely to be painful and embarrassing for women – which is supported by the data collected from women in this study. Third, as the main reason for doing these types of examinations is to prevent infection caused by vaginal examinations, then the way of doing vaginal examinations is called into question. This should be an aseptic procedure using sterile gloves and technique to avoid contamination from the anal area (WHO 1996).

- *Use of episiotomy*

Assessment of delivery registers and notes, as well as interviews with women and providers indicated that episiotomies are frequently given to women during labour. Women found them painful and in particular the suturing of the wound. Providers gave several reasons for using episiotomy: fear that women will sustain a tear; and the baby is too large.

Frequent use of episiotomy was also seen in other studies in China (Snell 1990; Grabowska 2001; Harris et al. 2007; Harris et al. 2009). Episiotomy rates of between 70% and 100% have been

reported and were justified by a belief that episiotomy would prevent tearing in Chinese women who are "too small" and have large babies (ibid). In these studies, midwives report fear of being publicly disgraced and perhaps even losing their jobs if tears are sustained. Data on occurrence of perineal tears are centrally collected and published, to ensure compliance with uniform practice of routine episiotomy. Xu et al. (2006) measured change in obstetric practice during vaginal delivery that could be attributed to the dissemination of evidence-based messages, and explored influences on practice change. The episiotomy rates remained high at all hospitals (between 76% and 99%), and actually significantly increased at one. Providers at this hospital explained that a restrictive policy was hard to implement, as the 'Medical Accidents Punishing Regulations', introduced in 2002, categorise third degree perineal trauma as a medical accident. This has led to obstetricians avoiding reducing routine episiotomies, in order to avoid litigation. Such legislation fails to act in the best interests of women. Although, providers and managers in this study did not report similar regulations being in place, their fear of causing perineal tears may be a result of these regulations.

Current scientific evidence indicates that routine episiotomy is not justified. It has no benefit for mother or infant, increases the need for perineal suturing and the risk of complications to the healing process, produces unnecessary pain and discomfort, and has potentially harmful long term effects (Carroli and Mignini 2009).

A focused change programme (The Better Births Initiative) was successful in moving practice away from routine use of episiotomy to a more restricted use in South Africa (Smith et al. 2004; Nzama and Hofmeyr 2005). The programme consisted of interactive workshops with all levels of staff, which comprised a variety of materials including a workbook with exercises, video material, oral presentations and visual aids, with some traditional printed materials. A local opinion leader acted as facilitator of the workshops as professionals would be more likely to accept and use information introduced by a member of their social and professional group than by an outsider. Self-audit was introduced in the facilities to help staff monitor changes in their practice.

- *Intravenous fluids and the use of oxytocin in the 1st stage of labour*

Giving intravenous fluids during childbirth was a common practice in this study: most women reported receiving them, and 41% received them according to the delivery registers assessment. It may be that this practice was not recorded in all notes. In contrast, most providers reported that they did not routinely give intravenous fluids, but only in prolonged labour, uterine inertia and when drugs are needed. Women who had IV fluids during labour perceived that these were to speed up labour and provide energy as they had not eaten any food.

Many institutions around the world, including South Africa, United States, Zambia and Columbia as well as those in this study have adopted the policy of restricting women from food and drink in labour as a protective measure against aspiration of gastric contents in the event of general anaesthesia (Maimbolwa et al. 2003; Smith et al. 2004; Conde-Agudelo et al. 2008; O'Sullivan et al. 2009). This policy has led to the adoption of routine intravenous fluids to women in labour in some institutions (Dawood and Quenby 2009). However, a Cochrane review concluded that there is no justification for the restriction of fluids and food in labour for women at low risk of complications (Singata et al. 2010). The routine use of intravenous fluids in labour has not been properly evaluated. As well as beneficial effects of fluid administration, there may be adverse effects on both maternal and foetal well-being. Intravenous infusions, may not only cause local pain, they also can make it difficult for women to mobilise and find comfortable positions during labour.

Perhaps more concerning is the frequent use of oxytocin in the 1st stage of labour. Again there are different estimates of the frequency of its use depending on the source, for instance, in the delivery notes assessment 20% of women received oxytocin to augment labour, half of the women in the interviews and discussions reported receiving these infusions, and providers reported a restricted use to certain circumstances only. The lower usage reported in the notes and by providers may be because providers know that augmentation of labour using oxytocin should only be done in certain circumstances and widespread use is not recommended. It may be that by chance I interviewed more women who had received oxytocin the 1st stage of labour. Oxytocin is used to strengthen and increase the number of contractions. Most women and providers reported using it as a way of controlling the pain i.e. by supposedly shortening the duration of labour. Frequent use of oxytocin in the first stage of labour is reported in other studies (Kabakian-Khasholian et al. 2000; El Nemer et al. 2006; Delvaux et al. 2007), where there were no obvious indications for its use and no protocols to guide its administration.

Oxytocin should be used with great caution as foetal distress can occur from hyperstimulation and, rarely, uterine rupture can occur, with multiparous women being at higher risk for uterine rupture (WHO 2003). The effective dose of oxytocin varies greatly between women, and therefore careful administration and monitoring is needed to ensure safe administration. Monitoring should include frequency, strength and duration of contractions, maternal condition and foetal condition. Ideally, oxytoxin infusions should be used in facilities where CS can be performed should maternal or foetal conditions deteriorate. However, close monitoring of women, including the use of partographs appears to be rarely followed in the facilities studied. The use of partographs will be discussed in

more detail later. Oxytocin was also used in all facilities surveyed in this study, even where CS cannot be performed. This raises issues of safety for both the mother and baby.

- *Use of antibiotics*

There was widespread use of intravenous and oral antibiotics for women with NVDs reported by women, health care providers and evident in the records. They were given over several days in order to prevent infection. This routine use for NVDs is not recommended (WHO 2006). However, prophylactic antibiotics given to all women undergoing elective or non-elective CS is beneficial for women but there is uncertainty about the consequences for the baby (Smaille and Gyte 2010). A systematic review assessing the effectiveness and safety of antibiotic prophylaxis in reducing infectious puerperal morbidities in women undergoing operative vaginal deliveries, could not make any recommendations and future research is needed to conclude whether it is useful for reducing postpartum morbidity (Liabsuetrakul et al. 2004).

Giving antibiotics is not without its problems. Widespread use of antibiotics may contribute to the development of antibiotic-resistant bacteria (Weinstein et al. 1996; Towers et al. 1998) as well as adverse reactions such as rash, gastrointestinal symptoms and thrush for mother and baby (Dancer 2004). There can also occasionally be haemotological problems, kidney or liver damage and anaphylaxis (Dancer 2004). Antibiotics reaching the baby during labour, or in the very early postnatal period, can affect the pattern of bacterial flora in the infant gut, with the potential to affect the baby's developing immune system (Bedford Russell and Murch 2006).

Widespread use of antibiotics raises questions about the level of cleanliness and sterility providers maintain during childbirth through hand washing, use of sterile gloves and sterile equipment and materials. Women in this study, received a high number of vaginal or rectal examinations putting them more at risk of infections, especially if sterile or clean techniques are not followed. The argument posed for the use of rectal examinations, appears to be somewhat contradicted by the routine use of antibiotics.

Other studies have shown that irrational drug use including antibiotics is common in rural China (Zhang et al 2003; Dong et al. 2008; Sun et al 2009b). Overuse of injections runs the risk of re-using disposable needles that can increase the transmission of HIV, hepatitis B and C, and other blood-borne diseases (Zhuo et al. 2002). As antibiotics are widely used in all facilities, it may be that women and families expect this kind of care. Client demand for intervention, such as antibiotics, intravenous infusions, has also been reported in other studies (Dong et al. 1999b; Sun et al. 2009b).

Clients perceive that these interventions can speed up recovery from illness and are good quality care (ibid).

- *Investigations at start of labour: ultrasound scan, blood tests and ECG*

Many women reported having investigations for which they have to pay, including blood tests, ECG and ultrasound scans at the start of labour. Although some of these investigations for some women may be warranted for medical reasons, others may be done for financial reasons. Hospitals need to compensate for decreased government funding by revenue raising and this has resulted in an increase in the provision of more lucrative services, including those involving expensive technology and unnecessary drugs (Hesketh and Zhu 1997b). The significant overuse of ultrasound scanning has been seen in other studies in China (Harris et al. 2007; Harris et al. 2009; Klemetti et al. 2010c; Long et al. 2010). In a household survey of women's use of maternal health care services, more than 1/3 of women received four or more ultrasound scans in two provinces (Klemetti et al. 2010c). They were mainly performed in the antenatal period and sometimes conducted in the postnatal period to check if there are no retained placenta and membranes (Harris et al. 2007). The importance placed on ultrasound scan to decide mode of delivery by women is seen in Harris et al. study (2007). Other aspects of antenatal care were considered by women to be less important than ultrasound and even unnecessary if the foetus was observed to be in the correct position (Harris et al. 2007). Use of expensive tests have financial implications for women. In Long et al.'s study (2010) of utilisation and costs of antenatal care, 90% of women received more ultrasound tests than recommended. Women's financial burden is increased due to the provision of expensive and possibly unnecessary services, and particularly amongst the poorest groups. No other studies reported the use of ultrasound scan during labour. In my field work in Bangladesh[1], ultrasound scanning during labour to recognise foetal distress was carried out.

- *Supine and lithotomy position for delivery*

All women reported delivering in the supine or lithotomy postion and this was confirmed by providers. Women reported feeling uncomfortable, and wished to adopt other positions. This position for delivery has been reported in several other studies in China (Xu et al. 2006; Harris et al. 2007) and has been practised over many years (McKay 1982; Williamson and Foster 1982; Snell 1990; Grabowska 2001; Xu et al. 2006).

[1] Observation of facilities and interviews with health care providers about EmOC in a rural area of Bangladesh indicated that ultrasound scanning was used to detect foetal distress by assessing the location of the umbilical cord and the turbidity of the amniotic fluid.

The supine posture has been widely used for the second stage of labour, mainly because of improved access for the caregiver, and in spite of physiological evidence of reduced uterine efficiency and impaired placental blood flow in this position. In a systematic review, use of any upright or lateral position was compared with supine or lithotomy positions (Gupta et al. 2004). The quality of trials was variable but any upright or lateral position was associated with reduced duration of second stage of labour, a small reduction in assisted deliveries, a reduction in episiotomies, an increase in second degree perineal tears, increased estimated blood loss greater than 500 ml, reduced reporting of severe pain during second stage of labour and fewer abnormal foetal heart rate patterns. They concluded that women should be encouraged to deliver in whichever position is most comfortable for them. This practice is not followed in the study county.

Medicalisation of childbirth: practices not followed

- *Companionship during labour and delivery*

Only women who delivered in the township hospitals were allowed to be accompanied by their relatives during labour and delivery. Providers recognised that this is what women wanted and needed. In the county hospitals, this depended on whether the family knew the doctors or manager. As part of women's perception of the ideal delivery, women wanted companionship during labour and delivery. Providers felt that relatives would interfere with the process of delivery and the sterility of the equipment, make women more anxious and privacy cannot be maintained when more than one woman is in labour. Careful use of screens and discussion with relatives about what they can do in the delivery room could overcome these obstacles.

Other studies in China report that companionship during labour and delivery is uncommon despite providers in Shanghai, Shanxi and Sichuan provinces generally supporting the idea of companionship in labour and recognising its potential to help with labour pain (Xu et al. 2006; Harris et al. 2009). However hospital protocols did not allow family to enter the delivery room (Harris et al. 2009). Providers were concerned about the relatives interfering with the delivery process, infection risk and conflict between provider and women.

Systematic review evidence shows the clear benefits of social support during childbirth: women who had continuous support were less likely to need analgesia during labour, to be delivered by CS or by instrumental vaginal delivery, or to report dissatisfaction with their childbirth experiences, with no adverse effects (Hodnett et al. 2007).

The situation in the study county has several implications. Women's satisfaction with their childbirth

experience may be lessened as a result of no companion during labour or delivery. Their perceptions of pain may be increased along with heightened levels of anxiety. Health care providers may not be aware of the benefits of companionship during labour and delivery, are not accustomed to relatives witnessing their provision of care and may not have confidence in their own practice. Female relatives or husbands could be companions for women in labour in China. Introducing companionship during labour can be difficult (Brown et al. 2007). In South Africa, it was introduced in some facilities using a focused change programme (Better Births Initiative) (Smith et al. 2004). They found that an interactive approach to implementing evidence-based practice can influence health professionals' decisions to change practice, and good working relationships and enthusiastic staff are central to effective change.

- *Use of partograph*

In this study partograph was not used or was used incorrectly in the hospitals assessed. A variety of partographs were used with some having no areas for foetal or maternal observations and no facilities used the WHO modified partograph or partographs with alert and action lines. Gao and Barclay (2010) found similar uses or non uses of partograph in their study in Shanxi and Sichuan provinces.

This picture suggests several issues with the use of partograph. Despite most doctors and midwives acknowledging that the partograph is useful to monitor the progress of labour and identify prolonged labour or complications, there are barriers to its correct use. The current training in the study county is not addressing the gaps in knowledge in providers' use of the partograph, their attitudes towards partographs, and perhaps does not use practical examples to reinforce the theoretical knowledge. I observed maternal health training, including partograph use, in the county, where no practical exercises were employed to develop skills and confidence in partograph use. This suggests that the training programs are ineffective and need improvement and careful evaluation. Lack of follow up and supervision will also affect its correct use, whereas continuous reinforcement and quality assurance will promote utilisation (Bosse et al. 2002). Lack of a standardised partograph suggests the limited value placed on partographs. In addition, none of the monitoring or supervision activities include assessment of the partograph, perhaps implying its lack of importance in delivery care. It may also be that the supervisors do not know how a partograph should be used. There were also no guidelines for using the partograph available in any of the facilities.

The WHO recommends using partographs because this can help birth attendants make better decisions in the diagnosis and management of prolonged and obstructed labour (WHO 2003), as well

as being a patient record in the absence of other documentation. Research has shown that by using a partograph the birth attendant can successfully identify the failure of labor to progress and take action to avert prolonged labor (WHO 1994b; Enkin et al. 2000). However, a systematic review of the effect of partograph on outcomes for women could not recommend the routine use of the partograph given the limited number of trials in this area and their heterogeneity (Lavender et al. 2008). The authors suggested that as it is in current widespread use clinicians and women should make their own decisions about its use. The partograph is an inexpensive and accessible tool that can effectively monitor the progress of labour (Mathai 2009). Further research should be carried out to understand the role of the partograph on labour outcomes in different contexts. However, until there is strong evidence of harm outweighing the potential benefits of this tool in the prevention of prolonged and obstructed labour, the partograph with the 4-hour action line and an agreed management protocol should be used routinely in the provision of labour care (ibid).

The implications of not using or incorrect use of the partograph in the study setting are that labour is not being effectively monitored, problems may not be identified early and this may result in delayed referral. Alternatively, it may give rise to more CS as a delay in labour may be diagnosed incorrectly if no pictorial assessment is made, and a wait and see approach with careful monitoring may have resulted in a vaginal delivery. In addition, it may be linked with the very limited use of assisted delivery in this county. Lack of monitoring using the partograph also brings into question the correct use and safety of oxytocin in the augmentation of labour.

- *Use of pain relief during labour*

There are several issues with regard to the management and relief of pain during labour. These are highlighted in Figure 8.2.

Figure 8.2: Use of pain relief in labour

First, although most women reported wanting pain relief, none received any pain relief drugs. Other studies in China have similar findings (Xu et al. 2001; Harris et al. 2007). Women and mothers had the common perception that pain is natural, necessary and to be endured. This highlights the significant role that culture plays with regard to attitudes towards labour pain. Although each woman's experience of childbirth is unique, how women perceive pain, make sense of it, and their coping mechanisms to manage pain is culturally defined (Baker et al. 2001; Callister et al. 2003). There are culturally proscribed behaviours towards pain: labour pain as an expected and normal part of giving birth was described in this study. Other studies in Taiwan and Eastern China have reported similar perceptions of pain (Callister et al. 2003; Cheung et al. 2011). A midwife wrote about her clinical observations of Chinese childbearing women, "It is expected that (childbirth pain) is within tolerable range, and is something every woman has to go through if she wants to have a baby" (Cheung, 1994, p. 215). This stoicism is reflected in the proverb often used by Chinese women: *"If you wish to be the best person, you must suffer the bitterest of the bitter."*

Second, women's ability to manage labour pain is influenced by how prepared women are for childbirth. In this study, women were generally ill prepared for the pain of childbirth. The other common perception amongst women and mothers that there are no drugs available or that the drugs are not safe for mother or baby suggests that women do not know about the available pain relief methods, including their advantages and disadvantages. This information is not shared with

them in the antenatal period during the antenatal check-ups or education classes which occur in most facilities where antenatal care is provided. Women often access information from the internet and magazines, which may not provide professionally authorised information.

A systematic review of the effects of individual or group antenatal education for childbirth on knowledge acquisition, anxiety, sense of control, pain, labour support, breastfeeding, infant-care abilities, and psychological and social adjustment did not provide sufficient evidence to support or oppose education (Gagnon and Sandall 2007). However qualitative studies identified benefits. Providing educational support to antenatal women can reduce their anxiety about childbirth (Leeseberg Stamler 1998), and helps women to be psychologically ready for childbirth (Koehn 2008). In addition, women not only gained the knowledge they had wanted but also gained other benefits. The classes had strengthened their relationships with their husbands, increased their confidence in themselves, and empowered them to have some control over a situation that was often out of their control (Koehn 2008). Lee and Holroyd (2009) examined Hong Kong Chinese women's satisfaction with and the perceived effect of childbirth education classes on their labour experience. They found that women perceived that they gained accurate information about labour and corrected misconceptions, they learned about relaxation and breathing skills to help manage pain, and relieved anxiety through the sharing of positive examples of childbirth. The authors also identified several challenges in providing health education for Chinese women. Women may be reluctant to actively participate in the classes, as they feel they should obey people in authority such as health care providers. The balance of biomedical approaches with traditional beliefs can be challenging. Chinese people seldom discuss their personal emotional problems openly because this may lead to "loss of face" (Holroyd et al. 1997).

Third, women, particularly in the county level facilities, received little support from relatives or health care providers. Yet, personal and professional support during labour is critical. Women's responses to childbirth pain may be modified by support received from caregivers and companions (Enkin et al. 2000; Hodnett et al. 2007). Continuous support during childbirth appears to reduce the need for pain relief (Hodnett et al. 2007).

Fourth, despite there being a wide variety of pain relief drugs available in the township and county level hospitals, providers and managers were very reluctant to use them because of their beliefs of their safety for mother and baby and efficacy, as well as their effects on the contractions themselves. Inhalation analgesia was available in some facilities and was used in induced abortion but never during labour. The dominant perception was that labour pain should be endured as it is natural and necessary for delivery and women should be able to tolerate this. Again the cultural

aspect to the meaning of labour pain is evident. However, it also suggests a lack of knowledge about the pain relief that is safe for childbirth, which may be explained by their limited access to medical journals and other evidence bases, and over reliance on the Chinese Obstetrics and Gynecology Textbook. There were also no policies or guidelines about the use of pain relief in labour evident in any of the facilities. This suggests that no policies or guidelines have been developed, or there is little value placed on management of labour pain. Without a change in attitude towards pain relief and increased knowledge about how to manage and relieve pain including use of drugs, providers are not able to give women an informed choice.

Nevertheless how labour pain is managed appears to have enormous implications. First, an important consequence is the high and increasing CS rate. This was also suggested in studies in Shanghai, Sichuan and Shanxi provinces (Xu et al. 2001; Harris et al. 2007). Although the reasons for high CS rate are many and complex in China, labour pain and its management seem to be important influencing factors. Women fear labour pain and decide to have a CS during pregnancy. There is a perception that CS is painless. Other women reported choosing CS during labour as they could not manage the pain: they did not know labour would be so painful, they had limited support during labour and they were frightened and feared for their own and the baby's safety. Studies around the world have indicated that fear of labour pain is an important influencing factor on choice of mode of delivery (Hildingsson et al. 2002; Chong and Mongelli 2003; Serekus and Okumus 2009; Fenwick et al. 2010; Kasai et al. 2010; Shahoei et al. 2011).

Second, the level of pain experienced and the effectiveness of pain relief may influence a woman's satisfaction with labour and delivery and may have immediate and long-term emotional and psychological effects (Christiansen et al. 2002). Negative feeling about the birth experience may also affect other women's perceptions of childbirth and their subsequent behaviour. However, others argue that satisfaction with childbirth is not reliant on the absence of pain. Women may view pain as a necessary and integral part of the birth experience and may be evaluated positively when women feel a sense of achievement (Enkin et al. 2000; Hodnett 2002). Participation in decision making, personal expectations and the amount and quality of support from providers are important dimensions of satisfaction with childbirth and may override other influences including pain and childbirth preparation (Hodnett 2002).

Woman-centred care

- *Choosing type of delivery*

Women in China, to some extent, are able to choose the type of delivery they have. In some ways this is a sign of women's empowerment and control of their own bodies and lives. However, the study findings bring into question whether this is a meaningful and informed choice, when faced with the realities of a technocratic NVD in many facilities. Women receive little information about the delivery process during pregnancy and are heavily influenced by family, friends and internet (all lay) views. Professional knowledge is not shared. In addition, the consent process for CS appears to be done with little if any involvement of the woman, and no discussion of the dangers of caesarean delivery.

A revision in policy about place of delivery, now allows women to choose the facility of delivery. There are many reasons for choice of facility of delivery including perceived quality, distance and costs. Higher level facilities are perceived as providing better quality care, but are associated with higher costs in terms of fees, transport and "red packets". So in reality, more affluent women can choose to deliver in the higher level facilities. It was clear from mothers and some providers that they perceived that rural women should only expect to deliver in the lower level facilities as this is all they can afford.

- *Continuous support from township hospital staff*

In township hospitals women tended to be cared for by the obstetric doctor or midwife throughout labour. Women described their care as being supportive and helped them manage the pain of labour and delivery. This kind of support has been identified with clear benefits (Hodnett et al. 2007).

- *No routine use of enemas*

Third, the use of routine enemas was not evident in any of the facilities. This is a practice that has been seen in other areas of China (Xu et al. 2001; Xu et al. 2006; Harris et al. 2007). Its routine use is discouraged as it has no effects on infection rates such as perineal wound infection or neonatal infections (Reviez et al. 2007). It may also have implications for birth satisfaction and costs.

8.4.4 Moving towards evidence-based women-centred care

Clinicians are often reluctant to change the way they practice, even when robust evidence of effectiveness exists (Greco and Eisenberg 1993). Interventions to change health care provider behaviour draw on theories of social psychology and behavioural science, since they are concerned

with understanding and influencing individual's attitude and ability to change (Grol 1997). For example, behavioural approaches are based on theories on conditioning and controlling behaviour. Human behaviour is seen as primarily influenced by stimuli before or after a specific action. The main strategies fitting into these approaches are reviewing performance and providing feedback to health care providers, giving reminders (signals before or during performance) and providing incentives or sanctions related to specific actions. Social interaction approaches emphasise that learning and changing are achieved through the interaction with and influence of important other people. Various strategies for achieving change which have been shown to be effective fit well into this approach: using opinion leaders to spread messages, outreach visits or facilitating by respected peers or experts who inform or support care providers, peer review and support in small local groups, and patient pressure. Organisational approaches do not focus on individual performance, but on creating the necessary conditions for change. Lack of good quality of care is basically seen as a system failure. Strategies that use this approach include total quality management, team building and changing structures or tasks.

Numerous strategies to change practice have been tried and tested in the area of maternal health care with varying degrees of success. These include distribution of educational materials, audit and feedback, reminders, educational meetings, outreach visits, local consensus processes and problem based learning, local opinion leaders, organisational interventions, provider incentives and clinical practice guidelines (Althabe et al. 2008).

In an overview of systematic reviews, Althabe et al. (2008) concluded that there are no "magic bullets" for ensuring the quality of health care services. No single intervention is suitable for all types of problems, and most interventions have small to moderate or variable effects. Interventions should be selected or tailored to address the underlying reasons for a failure to deliver effective services. Grol (1997) also identifies that implementing change is usually not a single action but involves a well planned stepwise process, including a combination of interventions, linked to specific obstacles to change.

Audit and feedback in maternal health has been widely used and this is discussed in sections 2.6.2 and 8.5.2. Evidence of the benefits of opinion leaders and their role in developing a culture of quality is also discussed in sections 2.6.1 and 8.5.2. Examples of how change in clinical practice was achieved are discussed in section 8.43, including the Better Births Initiative which used a focused change programme.

8.5 What factors influence the quality of childbirth care in hospitals?

In the systems model of quality of health care, the quality of structure includes policy, resources, organisation and management. From this study, it is clear that there are challenges in the quality of the structure of health care and therefore with creating an enabling environment for the provision of good quality delivery care. These include lack of guidelines and protocols and evidence-based care, approaches to improving quality of care and human resources and skilled birth attendance.

8.5.1 Evidence-based care and the use of guidelines and protocols

The majority of respondents had not heard of evidence-based practice, and where people had heard of it, they frequently did not understand or use this approach in providing care. For many health professionals in low- and middle-income countries, evidence-based approaches are something relatively new.

Evidence-based medicine was introduced into China over 15 years ago and disseminated over the last decade (Li et al. 2009). Several journals looking specifically at evidence-based medicine were launched in the early 2000's - The *Chinese Journal of Evidence-Based Medicine*, the *Journal of Evidence-Based Medicine*, and the *Chinese Journal of Evidence-Based Pediatrics* (Wang 2010). Several organisations including the Chinese Cochrane Centre, the Ministry of Education's virtual research centre of evidence-based medicine, China Medical Doctor Association's evidence-based medicine committee have developed programmes to strengthen evidence-based medicine nationwide (Wang 2010). Education programmes, including online programmes, are available. Clinical epidemiology and evidence-based medicine have become compulsory curricula for medical students and clinical postgraduates in all universities. Medical associations in all specialities have developed clinical guidelines based on evidence to inform clinical decision making and teaching (Wang 2010).

However, only a small proportion of medical practitioners are well informed about evidence-based medicine (Li et al. 2009). Doctors from developed areas and large cities such as Shanghai and Beijing can access evidence through databases at their universities (often for free), whereas doctors in more remote areas may not be able to access literature in this way. This may be compounded by limited knowledge of English, preventing use of best evidence in their practice (Wang 2010). Most of the world's clinical evidence comes from outside China. Many Chinese physicians doubt the validity of evidence from the Cochrane reviews as they believe they need evidence from studies conducted in China (Gao and Barclay 2010). There are issues with the quality of Chinese research and reporting of this research (Wang 2010), which reduces the credibility of the evidence.

Hospital managers have a strong influence on if and how evidence is used in clinical practice (Xu et al. 2006). Other research on "opinion leaders" and their influence on provider behaviour supports the important role that managers and other leaders have on uptake and enthusiasm for behaviour change (Thomson O'Brien et al. 2000). Staff may rather follow a directive of the hospital director than international recommendations. Hospital directors often have the power to change the current hospital policy or make a new policy in their hospital. In addition, in Chinese culture there is a social need to follow elders or authority; creating harmonious relationships in the work environment is essential as that is where people spend most of their time (Gao and Barclay 2010).

Li et al (2009) suggest health care providers need training in evidence-based medicine. Teams of teachers and methodologists need to be established who can then provide evidence-based medicine courses in medical universities for students and as continuing education for health care providers.

The movement to develop and disseminate clinical guidelines has been well established in developed countries for more than a decade (Grimshaw and Russell 1993). Guidelines as well as standards and protocols are widely used to standardize and improve the quality of maternal and neonatal care. Guidelines are key recommendations on the delivery of health care based on the best available evidence and expert opinions. Guidelines may be used directly or preferably translated into standards and protocols before use. They have been shown to help improve and standardise clinicians' practice (Dumont et al. 2005; Beliza'n et al. 2007; Kongnyuy and van den Broek 2009; Turner and Short 2009).

So what resources do providers use to guide their care? Guidelines and protocols were available in a few facilities in the study county, but generally these were not followed as staff preferred to use their textbook and practice as they always have done. In another study in Shanxi and Sichuan, there were no written policies or protocols for midwives to follow in the audited facilities (Harris et al. 2009).

There are no Chinese guidelines or textbooks that reflect current evidence and this prevents the evidence from being applied in hospital routines (Gao and Barclay 2010). Where there are guidelines this study found that there are issues with the dissemination and use of these guidelines and protocols in rural China. The guidelines and protocols are not reaching all facilities, or if they are they may not be in the hands of the staff providing the care. The guidelines are provided from the national or provincial levels of the Ministry of Health and disseminated through the city and county health bureaus. Rural health workers are not involved in the development of these guidelines, and this perhaps results in a lack of ownership and therefore reluctance to use. Where health care

providers and managers have been involved in the guideline development process, ownership and sustainability is promoted (Kongnyuy and van den Broek 2009).

Instead, many of the respondents talked of using the standard Chinese Obstetric Textbook which is available throughout the county, and is used during their training, to guide their care. It was first written in the 1970s and new versions are brought out every 5 years. Most bought their own copy which they kept at home. The textbooks were rarely available in the hospitals. Therefore health care providers were not always able to refer to the book when caring for women. The textbook is not as detailed as guidelines and protocols and generally does not use the latest available evidence.

What are the implications of not using guidelines and protocols but using textbooks? This may result in doctors and midwives providing care according to their own preferences and experiences rather than using evidence-based protocols. It makes it difficult to monitor the quality of care as there is nothing with which to compare actual practice. Evidence-based, international guidelines that can be locally adapted, such as those provided in the WHO Reproductive Health Library, could provide a valuable basis for both developing and implementing appropriate national clinical policies and practice guidelines.

8.5.2 Quality improvement activities

In this study, the main method of monitoring and improving quality was seen as the supervision provided by external higher levels. Other methods, such as using feedback from women and families, staff meetings to discuss issues within the facilities were evident but were not frequently or widely carried out. These methods will be discussed in light of international literature.

Supervision as a method of quality improvement

This study has shown supervision to follow the more traditional model whereby, external supervisors visit the facilities periodically to inspect records. The supervision focuses on the completion of records and the numbers of antenatal and postnatal visits made. The primary focus is to ensure that all notes were complete as this was thought to protect the facility from having to pay compensation in case of any medical disputes. The supervisors, and therefore the managers and staff, also concentrated on the antenatal and postnatal care rates. These are indicators that are used widely throughout China to assess the provision of maternal health care services. The government policy on "systematic management of maternity women" mandates five antenatal visits, health facility delivery and 3 postnatal visits for women in rural areas (Ministry of Health China 1989). These indicators are used to measure women's access to and utilisation of services, but do not reflect the content or quality of service provision such as what examinations and investigations are done, and

what information is given to women (Ministry of Health China et al. 2006; Long et al. 2010; Tao et al. 2011). In addition, these indicators do not say anything about the quality of delivery care. There is little, if any, discussion of individual health care provider performance, identification of problems, and joint problem solving. It tends to be punitive with threats of loss of bonus as an incentive to meet targets. It is difficult to see how supportive this type of supervision can be and how effective it is in improving quality of services.

Although complete notes can indicate a sense of quality, i.e. care has been taken over filling out notes, it does not necessarily mean that the documented clinical care has in fact been provided, and does not offer any assessment of the care itself. This is further complicated as in some facilities, the bonus system is also linked to the completion of notes. For every set of notes that are seen as complete, the manager gives the health care provider a financial bonus. The criteria for complete notes include listing of drugs and investigations and signature of doctor. Although this provides an incentive to health care providers to complete notes, it also can encourage health care providers to falsify data. To my knowledge no other studies have reported the payment of bonuses for complete maternal health care notes. However, studies and reviews have shown that the incentive or bonus system used widely in the provider payment system in China has resulted in many problems such as creating inefficiencies, waste of resources and poor quality health care including over prescription of drugs and investigations (Hu et al. 2008a; Yip et al. 2010).

Notes and registers could be used potentially to assess the numbers of CS and NVD as well as reasons for these types of delivery, numbers of episiotomies, numbers of complications and outcomes, numbers of rectal and vaginal examinations and management of complications for discussion in staff meetings.

Other studies have identified weak supervision of rural hospitals in China (Tolhurst et al. 2004; Ministry of Health China et al. 2006). The supervisory and monitoring capacity of the county health bureau is weak partly due to financial and human resource constraints. Its monitoring capacity is further limited by the often close relationship with service providers, which influences outcomes of supervision in an institutional context heavily dominated by relationships and patronage (Tolhurst et al. 2004). This study supports and adds detail to these findings.

There is evidence from studies that supportive supervision can improve the quality of care in the area of reproductive health. Staff actively participated in solving problems, teamwork was encouraged, overall performance was enhanced, increased skills and confidence (Ronsman et al. 2001; Marquez and Kean 2002; Ministry of Health Kenya 2005) and maternal health outcomes were

improved (Santos et al. 2006). Providing supportive supervision is a complex intervention requiring training of supervisors, mentoring of supervisors and development of simple and context – specific tools (Marquez and Kean 2002; Tavrow et al. 2003; Rowe et al. 2005).

Consumer input to improve quality of care

Receiving and using feedback from women and families was not widely carried out, and where it was used, only negative feedback was discussed. It may be that women and families rarely provide positive feedback to facilities. Only in one facility was there a clear mechanism for providing feedback, where a box was placed in a prominent position in the hospital. Otherwise, families have ad hoc meetings with hospital managers to discuss any problems with the care and treatment that they received. This may also encourage only negative feedback. It may also mean that managers do not pass on any positive feedback to their staff, but instead focus on negative comments in order to prevent similar feedback being given again. Negative feedback is also linked to the bonus system. If a health care provider receives some negative criticism from families, then the manager deducts the financial bonus. Unfortunately, positive feedback did not seem to result in any financial rewards. This system also implies that no feedback means that women are satisfied with the care that they received. This may not always be the case: women may not want to complain for fear of poor subsequent treatment, or may not feel able to complain as talking to the manager may be threatening. This could be attributed to women's sense of passivity or their perception that the problems are too trivial or too big to solve and there will be no point in commenting (Sitzia and Wood 1997; Sitzia 1999; Kabakian-Kasholian et al. 2000). Women may be reluctant to express dissatisfaction as a result of their sense of gratitude to the staff for the care that they did receive.

Receiving only negative feedback may also be de-motivating to both managers and health care providers. Encouraging positive as well as negative feedback from women and families can be useful in monitoring and improving the quality of care (Massoud et al. 2001; Hutchinson et al. 2011).

Quality improvement meetings

The majority of health care providers said that they rarely discussed quality of care. However some managers explained that they did discuss issues with care, negative feedback and medical disputes at monthly meetings. This discrepancy may reflect how the different respondents perceive quality. However, it does seem that no formal meetings focusing on quality are held in any of the facilities. It may be difficult to develop a "culture of quality" if there are no opportunities to discuss how to assess and improve quality of care. Developing a culture of quality in facilities creates an awareness

of and commitment to quality. It takes time to develop such a culture, but significant improvements in quality can be achieved (Lin 2000; Bouchet et al. 2002; Kelley et al. 2002; Umar et al. 2009).

The manager of the facility has the potential to have a pivotal role in quality improvement and changing practice. Quality improvement champions or leaders can help create this culture of quality and lead their staff to strive for good quality care. Examples of this have been seen in Honduras and Zambia (Lin 2000; Bouchet et al. 2002). Where a team of health care providers, managers and support staff are involved in identifying quality issues, developing solutions and solving problems, they will take more responsibility for suggesting and making improvements in their work (Lin 2000; Kelley et al. 2002).

Audits

None of the facilities carried out maternal, perinatal, near miss or criterion based audits. From the delivery registers and discussions with staff there were very few (if any) maternal deaths in these facilities in the last few years. There were also few stillbirths. The national MMR was 32 / 100000 live births, and the stillbirth rate was 10.4 / 1000 births in 2009 (MOH China 2009; Cousens et al. 2011). However, there are early neonatal deaths and cases of severe maternal morbidity or "near miss".

The majority of respondents had not heard of any of these types of audits. The audit and feedback process of collecting, appraising and acting-upon information on adverse events such as maternal and perinatal death or near miss maternal and neonatal morbidity is one of the keystones to quality improvement strategies in maternal and newborn care (WHO 2004b; Kongnyuy and van den Broek 2009; Pattinson 2009). A Cochrane review of randomised controlled trials of audit and feedback showed a greater impact on health care practices and outcomes than other improvement strategies (Jamvedt et al. 2006).

I was unable to find any publications in English reporting the use of criterion based audit, standards based audit or clinical audit on maternal health in China. Maternal and perinatal death audits, near miss and standards or criterion based audits could be introduced into rural China as approaches to improve quality of care. Maternal and perinatal death audits are methods that have been successfully introduced at national level in other middle income countries (Ministry of Health Malaysia 1998; Pattinson 2006). Areas of service that need change and standards for care are developed as a result of these investigations. Changes in clinical practice have been observed following maternal death reviews in hospital settings (Supratikto et al. 2002; Kongnyuy et al. 2008a; Kongnyuy and van den Broek 2008b). Studies have illustrated the feasibility of introducing criterion

based audit quickly and effectively to measure and improve the quality of maternal and newborn health care (Wagaarachchi et al. 2001; Weeks et al. 2003; Kongnyuy et al. 2008b). This type of audit is a non-threatening and effective way of beginning to agree standards of quality of care including women and baby friendly care. With regard to near miss audits, Filippi et al. (2009) reviewed publications of near miss audit experience in developing countries and showed that factors which make women arrive in poor condition in the hospitals can be successfully investigated and addressed through near miss audits.

There are two national systems in China that monitor maternal and child deaths: the National Maternal and Child Health Reporting System and the National Maternal and Child Mortality Surveillance System. A study by Gao et al. (2009b), investigated the maternal death review process in an inland province in China, and compared it with the UK CEMACH process to explore the gaps in reporting and reviewing to identify opportunities to improve the Chinese system. Several problems identified included: lack of anonymity or codes designed for anonymity for the deceased woman, the person who attended her birth, and the hospital where the woman received care; difficulty in investigating a maternal death owing to a lack of support for the process from the deceased woman's family and birth attendants; absence of guidelines for completing the case summary of the maternal death; auditors were often not professional obstetricians or midwives and lacked the necessary knowledge and experience to complete the forms with enough detail to make any conclusions; no details were described that could be used to assess the quality of care the woman had received, or learn lessons for future improvement; irregular maternal death review meetings which do not consider all the maternal deaths; and findings are not accessible at a local level for the concerned parties such as policymakers, health professionals, the community, and women of reproductive age. It is clear that despite a system being in place to investigate maternal deaths, it is not working effectively. This is a missed opportunity to use the information from this process to improve the availability and quality of maternal health care.

8.5.3 Human resources and quality of delivery care

Several issues emerged from this study regarding human resources and skilled birth attendance. Firstly, there is a shortage of skilled personnel to care for women in labour and conduct deliveries. Secondly, pre-service training programmes do not equip doctors and midwives with the necessary skills to care for women during labour and delivery. Thirdly, current methods of in-service training do not further develop health professionals' skills. Finally, the role of the midwife in providing intrapartum care appears to be on the decline. I will now discuss these issues in relation to other studies in China and worldwide.

Numbers and distribution of skilled birth attendants

Shortage of skilled staff in maternal health is a global problem. Current data on the proportion of women who deliver with a Skilled Birth Attendant show that while many richer countries have near universal coverage, just 62% of all births in less developed regions take place with a skilled attendant, and only 35% in least developed countries (Adegoke and van den Broek 2009). In Africa and Asia, only 47% and 65%, respectively, of women gave birth with professional assistance (WHO 2008). Some caution must be exercised with this data as most data are obtained through household surveys that rely on the woman's account of the birth attendant, which may not always reflect the actual situation (Hussein et al. 2004). According to WHO data, 98% of women are attended by a skilled birth attendant in China (WHO 2008). However, findings from this study question the definition used for this figure, and throws uncertainty on how skilled these attendants are.

Many respondents identified a shortage of staff hindered the ability to provide good quality delivery care. The reasons for this shortage are that it is difficult for township hospitals, and the county level hospitals to some extent, to attract doctors to work in these rural areas. There is greater capacity to earn money, more experience to be gained and more opportunities for promotion in higher level facilities. For similar reasons, township hospitals also experience problems with retention of staff. The issues appear to arise partly from the way that salaries are provided so that health care providers must generate income from provision of care. New graduates are not equipped to conduct deliveries and require more experience and training at higher level facilities before they are competent and confident to conduct deliveries. Some staff are not able to monitor labour, identify and manage complications.

Other studies in China have found similar problems: in the review of maternal and child survival strategies in China, a key constraint in the provision of MCH care was the shortage of qualified personnel (Ministry of Health China et al. 2006). They recommended the development of a long term plan for human resource development for MCH professionals to include the composition and geographical distribution of staff, basic and in-service training requirements, remuneration and rewards systems and supervision. In particular, a benefit package and performance based incentives should be introduced with a view to raising the morale and motivation of staff working in rural areas. Gao et al. (2010) suggest there is a need to retain qualified staff by providing adequate salaries that do not need to be "topped up" through informal payments, which should be stopped. A systematic review concluded that financial incentives may be effective in changing healthcare professional practice but there is no evidence that it improves patient outcomes (Flogdren et al. 2011). Bundles of incentives which are complementary and consider living and working conditions, environments

and development opportunities are likely to be more effective than individual interventions (Buchan 2004; Lehmann et al. 2008; WHO 2010a; WHO 2010b; Varpilah et al. 2011).

Others have found that health workers are concentrated in the county level facilities or the more affluent and larger township hospitals (Gong et al. 1997; Tao et al. 2011). Richer counties generate more revenue from local taxation from which they can fund more attractive remuneration packages to recruit the best staff (Liu et al. 2006). Many better-qualified personnel have left township health centres and poor areas for more attractive positions in county and higher level hospitals. The combination of the increasing number of low-skilled health workers and the fall of demand at rural health facilities, partly due to the loss of their most experienced personnel has resulted in the falling productivity of health workers (Gong et al. 1997; Martineau et al. 2004).

So what are the implications of a shortage of skilled staff? Fang et al. (2010) found that the regional health inequality in maternal and child health is unlikely to be reduced without appropriate investment in health resources and primary health care. Anand and Bämighausen (2004) made a cross country multiple regression analysis which found that the density of human resources for health is important in accounting for the variations in maternal mortality, infant mortality, and under 5 mortality across countries. The authors suggested that investment in human resources for health must be considered as part of a strategy to achieve MDGs 4 and 5.

Training and quality of delivery care

The pre-service training does not appear to equip health care providers with the necessary knowledge and skills to provide intrapartum care. In particular they felt ill prepared to manage obstetric and neonatal complications. On the job learning from more experienced doctors following their basic training was seen as vital. Liu et al. (2006) also found that many health workers have not received formal training appropriate to their jobs.

Other studies around the world have indicated similar problems with training of maternal health care workers. Studies in Benin, Jamaica and Rwanda suggest that health professionals' knowledge and skills are inadequate (Gbangbade et al. 2003; Boucar et al. 2004; McCaw-Binns et al. 2004). Obstetric complications, including life threatening emergencies, were inappropriately managed (Miller et al. 2003; Gohou et al. 2004). A study which evaluated the competence of health professionals who typically attend facility based births in four countries revealed interesting results (Harvey et al. 2004). They measured competence against WHO Integrated Management of Pregnancy and Childbirth Guidelines and found that on average providers answered 56% of the knowledge questions correctly and performed 48% of the skills correctly. They concluded that a wide

gap exists between current evidence-based standards and current levels of provider competence. The basic training of health care workers needs to promote the essential competencies, skills and attitudes needed for clinical areas. More investment in the training system, including the trainers is necessary (Koblinsky et al. 2006).

In-service training focusing on knowledge acquisition was regularly provided to health care providers in the study county, but without any opportunities to practice skills. Although there were perceived benefits to this type of training such as updating knowledge, there were many criticisms including that it does not develop skills, it is too short and does not improve the quality of care. Some providers found it difficult to attend training sessions. Similar findings were reported by a study in Fujian Province where managers are reluctant to send their staff for training because of the costs (Liu et al. 2006). Finally, there is evidence that there are problems with the way that training is given. Didactic approaches to training may have little effect on changing behaviour, whereas provision of active learning opportunities such as case discussions, hands-on practice sessions and inter- active workshops with provision of clinical guidelines are effective (Rowe et al. 2005; Grady et al. 2011). Many studies have shown that in service training on its own may not improve quality of care (Vidal et al. 2001; Dick et al. 2004; Gill and Ahmed 2004; Islam et al. 2006). In-service training, together with adequate support and supervision, can affect the quality of care (Koblinsky et al. 2006).

Declining role of the midwife

In this study, most respondents thought that the role of the midwife has declined over the last decade. There are fewer midwives in the county and they take less responsibility during childbirth. They rarely conduct deliveries independently as women tend to choose doctors to do their deliveries rather than midwives. Another factor is the high CS rate – only doctors are allowed to perform CS, which may also influence women's choice of attendant. In the facility assessments and interviews with women, health care providers, managers and key informants, doulas were not mentioned.

In a survey of women who had delivered in the past year in two counties in Anhui (including the study county), 95% of women reported having a doctor as the birth attendant, with the remaining 5% being cared for by a midwife (Klemetti et al. 2010c). Similar rates of attendance by doctors were found in two other provinces: 98.3% in Chongqing and 83.8% in Shaan'xi (ibid).

Studies have shown that the international trend in cadre of birth attendant is towards births with doctors (Koblinsky et al. 2006; Stanton et al. 2007). Koblinsky et al. (2006) argue that midwives and nurse-midwives have held their own in terms of coverage of births over the past decade, and the

increase in the proportion of doctor-assisted births has been at the expense of traditional birth attendants rather than at the expense of other professionals. However in Sub Saharan Africa, the proportion of doctor-assisted births has slightly decreased (Stanton et al. 2007).

- *Reasons for declining role of midwives in China*

The perceived status of midwives is another factor that may well be influencing the demise of midwifery. Midwives' status in China is inadequately recognised (Barclay 2008; Cheung 2009; Cheung et al. 2009; Harris et al. 2009; Mander 2010). The low status of midwives is also reflected in the training provided to midwives and their career opportunities. Midwifery is perceived as a lower status profession than nursing, with fewer career opportunities (Harris et al. 2009). There are no university degrees in midwifery, but midwives have been able to gain higher university qualifications in nursing. There are many more nursing students than midwifery students, with a ratio of 40:1 (Harris et al. 2009). This low status of midwives is also seen in other countries such as India and Bangladesh (Sherratt 2000). Cultural views of women's bodies, especially because of menstruation, often define those who provide care to women in childbirth as being polluted, and therefore they are seen as low grade workers (Goodburn et al. 1995). As a result, many families are reluctant to support their children to enter this profession. Recruitment is aimed at the less academically able ranks and at lower class families and the curriculum is developed to accommodate the limited education of the recruits, with little attention given to their education and training (Sherratt 2000).

In Cheung's (2009) review of the history of midwifery in China, she offers a number of explanations for its demise. First, Chinese society regarded midwifery as a second class occupation, and this belief has influenced modern policy making decisions. The approach to childbirth was to emulate the US obstetric model by using obstetricians and nurses to replace midwives and midwifery education was largely discontinued in 1993. It was believed that obstetricians were better trained and safer, so obstetricians, nurses and doulas replaced midwives. The phasing out of midwifery was seen as a big step forward by Chinese society as midwives were blamed for causing high infant and maternal mortality. Second, lack of research into Chinese midwifery hinders its ability to convince policy makers of its speciality and importance in providing care for women. Third, focusing on the cost effectiveness of services has resulted in the spread of the doula service (supportive birth companion paid by the family) in urban areas and extensive use of obstetricians.

- *Chinese midwives' views of their role in childbirth*

What do midwives think of their role in childbirth? In Harris et al. (2009) study of midwives position in contemporary China, midwives differentiated their approach to managing childbirth as scientific

but also embedded in years of experience which better meets the needs of women, from that of doctors, who by contrast are seen as following a more rigidly textbook based practice with less empathy for women. However, they felt they had little power to influence the medical approach, apart from opportunities where they can make suggestions or guide the learning of junior doctors in normal birth. Doctors have more power and are the key decision makers in the labour ward.

"It would seem that the increasing power of the medical profession in the health care system and the forces of a market oriented economy, together with the influence of an American style nursing education system, the hospitalisation and medicalisation of birth, combine to ensure the subordination and disempowerment of midwives" (Harris et al. 2009, p208).

A study investigating midwives' views of their roles and ability to practise in a proposed midwife-led normal birth unit in Hangzhou, the capital city in a rich province of Zhejiang found that most welcomed the prospect of this type of unit, although there were challenges in defining normal birth and midwife led care (Cheung et al. 2009). The study found that although midwives are willing and able to assist with NVD, they did not want to challenge a medical decision in case there was a medical dispute. Midwives also reported that they did not get the attention and respect they thought they warranted and were not able to use their skills clinically. They were accustomed to assisting doctors and felt they had lost their professional autonomy and power.

- *Implications for quality of delivery care*

Midwives' role in reduction of maternal mortality is evident. There is evidence that maternal mortality in Malaysia and Sri Lanka have significantly reduced partly due to a widespread use of midwives. The majority of maternal health care is provided by well-trained but relatively low-cost midwives, who are adequately supplied and equipped and are closely supervised and supported by nurse–midwives and much smaller numbers of medical doctors (Pathmanathan et al. 2003). Simultaneously, the facilities were strengthened to care for complications; some rural facilities provided BEmOC, and others had surgical facilities that offered full CEmOC. The competence, status, and role of midwives and nurse–midwives have been central features in MMR reduction (Pathmanathan et al. 2003). In Malaysia and Sri Lanka, midwifery has held a long-standing professional status, with competencies being defined and accepted. Both countries established early the need for close and competent supervision and, accordingly, trained and placed professional nurse–midwives. In a review, De Brouwere and Van Lerberghe (2001) explored the issue of professionalization of care delivery and the optimal mixture of professionals. In summary, various experiences show that with the right training, supervision, regulation, and accountability for results,

midwives perform well, and constitute an effective intervention in reducing MMR. In order to increase skilled birth attendance in Afghanistan, the Ministry of Public Health agreed to focus on the development of midwives, placing them in a critical role in lowering the country's high MMR and strengthening the overall health system (Currie et al. 2007).

So what are the implications for quality of delivery care of the declining role of midwives in maternal health care in China? The medicalised approach to childbirth will continue to be the dominant approach, with doctors playing the role of birth attendant. This may result in more interventions including CS. Mander (2010) identified that the CS rate is highest where midwives are most oppressed, weakest or non-existent. Women will continue to expect to receive care from a doctor and will perceive care from a midwife as substandard. Through widespread publicity, the profile of midwives and midwifery can be raised and women's and families' perceptions of midwifery can be changed. Another approach is to assess the training of midwives to ensure that it meets the needs of women and families in a changing socio-economic environment. Without policy support, these are unlikely to be successful.

8.6 Limitations of the study

There are several limitations of this study that particularly need to be considered with regard to the trustworthiness of the findings.

First, observation would have been a useful method of gaining additional insights into the culture of quality in the study sites. Participant observation would have captured the interactions between providers and women, providers and providers, and providers and managers, shedding light on the perceptions and practices with regard to quality of care. However, as described in section 4.4.3, I was unable to use this method. Instead, by using the other methods such as conducting facility assessments, interviewing health care providers and managers, observing records and discussing care with women and families, a picture of the quality of care in the facilities was developed.

Second, not being able to speak Chinese was a major limitation in all aspects of the study. Therefore the research team conducted all the interviews and discussions. Thorough training and periods of reflection throughout the data collection phases tried to ensure that the research team had a good understanding of the study questions. However, there were occasions when some issues, which I as the principal researcher would have probed further, were left untouched by the research team. This was particularly the case in the earlier part of the study. By reflecting on the transcripts, the research team and I were able to highlight areas where more probing would have been beneficial and they were able to incorporate this learning into their subsequent interviews and discussions.

Third, translation of the transcripts resulted in some loss of data and meaning. However, many attempts were made to ensure that data loss was kept to a minimum. The recordings were first transcribed into Chinese and then translated into English by the research team. These translations were then checked by the senior research assistant. I then read them carefully and asked for clarifications. The senior research assistant checked these against the Chinese transcript and recording. This process was repeated several times until the translations were clear.

Fourth, as an "outsider", doing research in a rural area in China has several implications. My background as a western trained midwife will have influenced the study design, the methods and data collection tools. I may have inhibited county officials, health care managers and providers from speaking freely about delivery care and the health system, for fear of criticism about their facilities. Attempts were made to minimise this through training of the research team to conduct the interviews and discussions, prolonged period (over 2 years) of engagement with the study county allowing relationships to be built with the county officials and health care managers and providers. Being an outsider also affects the analysis, interpretation and presentation of the data. Other researchers with different positionalities may have different interpretations and presentations of the data. However involving the research team in the process of data analysis brought different viewpoints (and not just a western midwife perspective) to the interpretation.

Fifth, this was a case study using one county in rural China. Studying a single county raises questions about the transferability of the results. Is it possible to generalise from the findings of this study to rural China? Rural China covers a range of provinces and counties with very different cultural, geographical and socio-economic contexts, as well as maternal health situations. It would therefore be impossible to transfer these findings directly to all other rural areas in China. However, by constructing the case of the study county for this study and providing detailed contextual information about the case, i.e. a "thick description" of the researched context, the research methods and the phenomena found, I and others can assess their transferability to another setting. The study raises questions, theory and hypotheses that can be asked in other settings e.g. throughout China, in a more generalisable way.

Sixth, this study explored women's experiences of childbirth care, and included their perceptions of the ideal delivery and birth attendant having recently given birth. Some women and mothers found this difficult to articulate. Including pregnant women in the study sample and exploring their expectations of childbirth may have provided a more in depth picture, and this could contribute to the limited literature from the global south in this area.

8.7 Conclusion

A medicalised approach to childbirth in China appears to be the dominant paradigm emerging from this study. It is evident in the high use of interventions during childbirth. The rising rate of CS is also a significant example of the medicalisation of childbirth. There is also little evidence of woman friendly birth care, with women having little involvement in care and decision making.

The approach to childbirth care appears to be not based on the latest available evidence. Interventions which have been shown to be unnecessary and potentially harmful are commonly being done such as rectal examinations, routine administration of intravenous fluids, supine or lithotomy position for delivery, oxytocin infusion in the first stage of labour to speed up labour and provide pain relief and episiotomy. Evidence-based interventions known to be beneficial are not routinely being carried out such as companionship during labour and delivery, use of partograph to monitor labour, pain management and relief. Evidence-based guidelines or protocols are not being used, and instead a single textbook is widely viewed as the most important source of information

There is no apparent culture for quality improvement in health facilities or in the wider health system in the study county. There is no supportive supervision to promote good quality care; instead there is "inspection" from the higher levels with a focus on quantity of care rather than quality of care, with punitive measures to ensure achievement of targets. There are regular staff meetings in facilities, but they are not used to discuss or improve quality of care. No type of audit such as maternal and perinatal death audit, criterion based audit are carried out to measure and improve quality of care.

Finally, there are challenges with skilled human resources for childbirth care. As a result of the increasing rate of CS, staff are losing their skills and confidence in conducting NVD and managing complications. Pre-service training does not equip health care providers with the necessary skills and experience to manage NVDs. The role of midwives in delivery care is declining as more and more women opt for doctors to conduct their deliveries as a perceived safer option.

Chapter 9: Conclusion

9.1. Introduction

This study is an in depth exploration of the quality of delivery care in rural China. Childbirth in health facilities is promoted in China. However, the limited data available about the quality of maternal health services, and in particular childbirth services, suggest that improvements are needed. A combination of methods was applied including qualitative observation, interviews and discussions as well as analysis of data from patient records and facility registers. By looking at quality from the perspectives of women, health care providers, managers and key informants a full and vivid picture of delivery care in rural China has emerged. The study also analysed the health system factors that influence how delivery care is provided. Such a detailed exploration has not been conducted in China.

9.3 Main findings

9.3.1 Question 1: What does quality of care in maternal health mean in rural China?

This thesis has presented an understanding of what quality of care means to the different stakeholders involved in delivery care in rural China. There are no studies that have looked at this area in such detail in China. This thesis found that women and health professionals generally agreed on what quality of care means, with the overriding aspect of quality being the importance of safety of care resulting in a healthy mother and baby. This perception is broadly in keeping with international literature.

Other common elements of quality were the ability of health care providers to communicate with women and families and health care providers being skilled. However there were some differences as women placed importance on the environment being clean and comfortable; equipment being available in the delivery room; and being provided with information so that they are prepared for childbirth. Health care providers and managers emphasised the importance of providing care according to laws and guidelines, whilst managers also focused on the ability to identify high risk women. Key informants explained that quality of care was dependant on having enough skilled staff; and saw quality of care as part of the continuum of care including antenatal, delivery and postnatal care.

This thesis has offered insights into the perceptions of women, mothers, health care providers and managers about the ideal delivery and birth attendant. There is little research done on this area in China. Studies in other countries have explored women's expectations of delivery, but they have not

explicitly sought women's perceptions of the ideal delivery (see 3.5). In this study NVD was seen as the ideal delivery by the majority of respondents. Health care providers and managers supported NVD but were also concerned about disputes between families and facilities, and accepted that women should choose their mode of delivery. Perceptions of safety came into the choice of place of delivery and attendant, with most women opting for delivering at a county level hospital and with a doctor as they are seen to have more equipment, better skills and more able to manage complications. Older age, experience in conducting deliveries and CS, good skills, able to comfort and relieve pain, treat with respect, able to promote NVD but also identify when CS is necessary were considered to be important attributes of the birth attendant.

Only, by developing a detailed description of what quality of care means to stakeholders, is it possible to assess this quality, develop relevant, responsive and feasible targets for quality, and ultimately improve the quality of care.

9.3.2 Question 2: What quality of care do women receive during childbirth in hospitals?

This thesis uses data from a variety of sources and viewpoints to describe the quality of care women received during childbirth. Such a holistic approach to exploring quality of care has not been followed in China, and rarely in other countries. The thesis has presented that the dominant approach to childbirth care in rural China is that of medicalisation, but not necessarily based on the latest available evidence. Practices such as episiotomy, administration of intravenous infusions and antibiotics, rectal examinations and supine or lithotomy position for delivery were commonplace. On the other hand, practices which are known to be beneficial, such as partograph, use of pain relief, social support during labour and delivery were not routinely carried out. Globally, the dominant approach to childbirth is one of medicalisation constructing birth as potentially risky, requiring technical management. This study showed that the concept of identifying and managing risk is the common approach applied by health care providers, managers and key informants to deal with women during pregnancy and childbirth. This is evident in the training they receive, the literature they use to guide practice and the indicators they use to monitor services.

Women's perception of the ideal delivery was only partially met. Some aspects such as having a NVD, the skills of the providers being good, and being satisfied with the level of privacy were achieved. However other aspects were not met including place of delivery, companionship during labour, support from health care providers to manage pain, facility environment and participation in decision making and informed consent. Not providing the ideal delivery can be seen as reproductive health rights issue as women's right to a delivery with a choice and discussion of place, mode of delivery, attendant and aspects of care are not supported. If women are not satisfied with their care,

then this may deter them from using the services again. This has implications for safety in terms of home delivery or unattended delivery, and costs should they use services at higher levels of the health system.

The records assessment clearly showed that the CS rate is very high in this county, supported by the narratives of the health care providers, managers and key informants. This is not a new finding, but this study sheds light on this phenomenon and the complex reasons for the increase in CS rate. In particular, by focusing on the care during labour and NVD, this study highlights how this can affect women's and providers' behaviour with regard to CS. Amongst the common reasons for women and families choosing CS in this study are perceptions that CS is less painful than labour and NVD and it is safer for mother and baby. This raises issues about how women prepare for childbirth and in particular their perceptions and expectations about labour pain and its management. This includes the role of health care providers in this preparation. This thesis also presents unique insights into health care providers' and managers' views on labour pain and its management, illustrating that the dominant view is that labour pain is natural and should be endured, and pain relief is not safe during labour. It has also shown that providers and managers are losing confidence in their ability to manage NVD and complications and are therefore resorting to CS as a safer and less risky method of delivery. Other studies looking at CS rates have focused on the women's views and financial factors, with little exploration of NVD and how this relates to CS. There are implications for policy and these will be explored in section 9.4.

These findings are of great pertinence globally. CS rates are high in many countries: in the west such as the US and UK, but also in countries in economic transition such as Vietnam and Brazil. In these countries, the health care system is developing, along with rapid economic growth. However there is little control of health care costs and provider behaviour. The learning from this study can help other countries explore the reasons for their high and increasing CS rates.

9.3.3 Question 3: What factors influence the quality of childbirth care in hospitals?

By exploring quality of care from a health systems perspective, this thesis presents a unique picture of childbirth care. There are challenges to creating an enabling environment for the provision of good quality delivery care. A lack of guidelines and protocols within facilities, as well as little understanding of the concept of evidence-based care was evident in this study (see 8.5.1). Supervision of health care providers by the county MCH hospital and health bureau concentrated on the completion of records and the antenatal and postnatal care rates. These are indicators that are used widely throughout China to assess the provision of maternal health care services. They do not reflect the content or quality of service provision such as what examinations and investigations are

done, and what information is given to women, and do not say anything about the quality of delivery care. Apart from this type of supervision, there were few opportunities to discuss or focus on improving the quality of care. Other ways, such as using feedback from women and families, staff meetings to discuss issues within the facilities were evident but were not frequently or widely carried out. Maternal and perinatal death audits, and criterion or standards based audits were not carried out in any of the facilities. Studies in other countries have highlighted the benefits to quality of care of conducting such audits (see 8.5.3), but no studies in China about these methods have been reported.

This study identified several challenges with regards to human resources and skilled birth attendance. There is a shortage of skilled staff in the facilities to care for women in labour and conduct deliveries resulting from difficulties in recruitment and retention. Pre-service training does not generally provide doctors and midwives with the necessary skills to care for women during labour and delivery, and they therefore require more training and support from experienced staff. Furthermore, current methods of in-service training do not further develop the skills of doctors and midwives. Difficulty in staffing rural areas is common in many countries, including China and in particular ensuring skilled birth attendance is a key issue (see 8.5.4).

This thesis illustrates that the role of the midwife in providing intrapartum care appears to be on the decline in China. Other studies in China have supported this finding (see 8.5.4). This has important implications for the promotion of NVD and the reduction of the escalating CS rates in China.

9.4 Implications for policy and practice

The thesis raises several important implications for policy and practice. They include:

- There is potential for a culture of discussion about quality of care to be stimulated in facilities. Currently, there are missed opportunities to discuss quality of care such as when women visit facilities for postnatal care or immunisations for the baby and staff meetings. These opportunities could be used to discuss the content of care, perceptions of care from the different perspectives in a blame-free way so that ways to improve delivery care can be discussed and implemented.
- Introduction of criterion or standards based audit to facilities could be a feasible and quick way to change practice and improve quality of care. This is a non-threatening and effective way of beginning to agree standards for quality of care including women and baby friendly care.
- Raising the profile of evidence-based care and how this can be used in everyday practice in rural China is an important aspect to improving the quality of care. This could be done through several

approaches: in-service training of health care providers and managers; including references to evidence in the obstetrics textbook; evidence-based care as a concept in pre-service training. Evidence-based, international guidelines that can be locally adapted, such as those provided in the WHO Reproductive Health Library, could provide a valuable basis for both developing and implementing appropriate national clinical policies and practice guidelines.

- Perceptions of labour pain and its management have serious implications for women's experiences of childbirth and mode of delivery. Although the reasons for high CS rate are many and complex in China, labour pain and its management seem to be important influencing factors. Addressing this important area could be done in several ways: providing health care providers with evidence of the uses and benefits of pain relief in labour; training health care providers in the use of pain relief and monitoring of labour; supporting health care providers to prepare women for NVD including how to manage pain through training, and development of materials for antenatal education.
- There is an opportunity to introduce quality of delivery care indicators to the existing system of monitoring facilities, such as rates of episiotomy, active management of the third stage of labour, administration of antibiotics, and administration of intravenous fluids.
- A model of supportive supervision could be introduced to promote confidence and self esteem amongst health care providers to provide good quality care. In the supervision process, compliance to quality standards can be assessed, knowledge and skills transferred, feedback to supervisees provided, problems identified and action plans developed. In addition, ways to support health care providers in making decisions about clinical care could be discussed, and dealing with requests for interventions such as oxytocin infusions and caesareans sections.
- Promotion of NVD amongst women and families, as well as health care providers and managers. There are several approaches that could be employed: hands-on training of health care providers to manage NVD and complications; development of women's groups to support NVD; education activities during pregnancy which highlight the benefits of NVD; financial incentives to providers for conducting NVD; and monitoring the number of NVD and reasons for CS.

9.5 Areas for further research

Several unanswered questions emerge from this study. Firstly, the role of the midwife in promoting NVD and reducing CS rate needs to be explored. The midwife is in a unique position to work with women to support normal childbirth. Exploration of the midwife role and how it has changed over time would reveal insights into the influence of midwives on medicalisation of childbirth, their views on medicalisation, and approaches to strengthen the role of the midwife.

Secondly, how quality improvement methods such as near miss or criterion based audit could be introduced into rural areas would be an important area for research.

Thirdly, there is a need to explore ways to introduce evidence-based care into rural areas. This could include action research with health managers and health care providers to develop standards and indicators for quality of care based on evidence.

Fourthly, more quantitative work using this case study as a starting point is needed. Key quality issues described in this study could be assessed for their frequencies in other settings.

Finally, this study approach to exploring quality of care can be adapted for use in other settings. As part of my current work in India I am adapting the methods I developed in this study to explore the quality of care in rural health facilities.

9.6 Final conclusion

In China, all deliveries are required to take place in health care facilities. Routine monitoring and studies have shown that most women do give birth in facilities, with doctors and sometimes midwives in attendance. Studies have also indicated that the quality of care in rural China is poor and in need of improvement. However, they did not indicate what areas of improvement in care are needed. This thesis is a case study exploring in depth the quality of delivery care in rural China.

This thesis has generated a detailed picture of what women, families, health care providers, managers and policy makers perceive as good quality delivery care. These multiple perspectives have not been explored in previous studies. The central feature of quality was the assurance of safety, resulting in a healthy mother and baby.

The thesis has described the care that women receive during childbirth in the facilities, and their experiences and perceptions of this care. By comparing the perceptions of the ideal delivery and the actual experiences of women, areas for improvement in care were highlighted. In addition, provider perspectives of provision of care were sought, offering a unique insight into childbirth care in rural China. The dominant approach to childbirth care in rural China is that of medicalisation, but not necessarily based on the latest available evidence. A key example of this is the high CS rate. This thesis offered a unique perspective on the reasons surrounding this complex issue, through a discussion of the care provided during NVD and how this may contribute to the escalating CS rate.

Delivery care operates within a wider health services delivery system. Aspects of the health care system have important influences on the quality of delivery care. The lack of guidelines and protocols and evidence-based care documents is evident in all facilities, instead an obstetric

textbook is used. This may result in doctors and midwives providing care according to their own preferences and experiences rather than using evidence-based protocols. It makes it difficult to monitor the quality of care as there is nothing with which to compare actual practice.

This study has shown supervision to follow the more traditional model whereby, external supervisors visit the facilities periodically to inspect records. They focus on indicators such as antenatal and postnatal care rates that are used widely throughout China to assess the provision of maternal health care services and how they meet the needs of women, rather than individual health care provider performance, identification of problems, and joint problem solving. It is difficult to see how effective this is in improving the quality of services.

Opportunities for discussing quality of care are in place but not used to address quality of care, such as the regular staff meetings, visits by women to the facilities. Audits of any description were not carried out in any of the facilities.

This study also revealed that as a result of the increasing rate of CS, staff are losing their skills and confidence in conducting NVD and managing complications. Pre-service and in-service training does not equip health care providers with the necessary skills and experience to manage NVD. The role of midwives in delivery care is declining as more and more women opt for doctors to conduct their deliveries as a perceived safer option.

In this study both qualitative and quantitative methodologies were used to gather data from a wide variety of sources relevant to the quality of delivery care in rural China. Lessons learned from this case study can be informative about the experiences of childbirth in similar contexts and could be used to generate theory, for example the complexities of the increasing CS rate, and the role of the midwife and the medicalisation of childbirth, to be tested more widely.

Appendix 1: Thematic framework

1. Defining quality of care
    1.1. Definition of quality of care
    1.2. How to assess or evaluate quality of care
    1.3. Important aspects of quality of care
2. Ideal delivery
    2.1. Type of delivery
    2.2. Place of delivery
    2.3. Use of pain relief
3. Ideal birth attendant
    3.1. Skills and characteristics
    3.2. Qualifications
4. Views on care during labour and delivery
    4.1. Opinions on what care is good
    4.2. Opinions on what care is poor
    4.3. Reasons for perceived poor quality
    4.4. Suggestions for improvement
5. Experiences of care during labour and delivery
    5.1. Communication with health providers
    5.2. Consent and choice
    5.3. Privacy
    5.4. Skills of health providers
    5.5. Environment
    5.6. Admission procedures
    5.7. Support from family
    5.8. Support from staff
    5.9. Practices:
        5.9.1.Episiotomy
        5.9.2.Perineal shaving
        5.9.3.Vaginal examinations
        5.9.4.Rectal examinations
        5.9.5.Enema
        5.9.6.Position for delivery
        5.9.7.Mobilisation
        5.9.8.Pain relief
        5.9.9.Intravenous fluids
        5.9.10. Use of oxytocin
        5.9.11. Antibiotics
        5.9.12. Fundal pressure
        5.9.13. Food and drink during labour
6. Choice of place of delivery
    6.1. Place of delivery
    6.2. Reasons for choice
7. Choice of delivery type
    7.1. Type of delivery
    7.2. Reasons for choice or decision
8. Preparation for childbirth
    8.1. Information obtained

8.2. Sources of information
8.3. Financial preparation
8.4. Practical preparation
8.5. Preparation for emergencies

9. Provision of delivery care
   9.1. Role of health care provider
   9.2. Role of manager
   9.3. Care provided
   9.4. Enablers to provision of good quality of care
   9.5. Barriers to provision of good quality of care
10. Issues around human resources
   10.1. Numbers and types of staff
   10.2. How staff are employed
   10.3. How salaries are provided and amounts
   10.4. Use of rewards, punishments and red packets
11. Issues about training
   11.1. Current knowledge and skills of staff
   11.2. Basic training given
   11.3. In service training given
   11.4. Training needs
12. Issues about other resources
   12.1. Drugs
   12.2. Equipment
   12.3. Environment of hospital
13. Issues about supervision
   13.1. Methods of supervision
   13.2. Effects of supervision
14. Issues about funding of maternal health care
   14.1. Views on amount of funding for maternal health care
   14.2. Sources of funding
   14.3. Effect of funding
15. Issues about guidelines, policies and laws related to maternal health
   15.1. Availability and use of clinical guidelines
   15.2. Knowledge of laws and policies on maternal health
   15.3. Effects of policies and laws
16. Monitoring of quality of care
   16.1. Ways to monitor
   16.2. Effects of monitoring
   16.3. Targets for quality of care
   16.4. Communicating about quality of care
   16.5. Responsibility for quality improvement
17. Evidence-based care
   17.1. Understanding of what evidence-based care
   17.2. How it is used
   17.3. Effects of evidence-based care
18. Low number of deliveries in hospitals
   18.1. Situation of number of deliveries in hospital
   18.2. Reasons for low numbers
   18.3. Suggestions to increase numbers

Appendix 2: Examples of coded segments: evidence-based care

Interview with health care provider, township hospital	
T: Have you ever heard of evidence-based medicine? S: I have heard of it, but I can't explain it. Maybe it is something about the hospital management. **T:** And what's your opinion of evidence-based medicine? S: It is good in some aspects. For example, fatal sex identification by B-type ultrasonic examination is prohibited. In this way, we can protect both women and babies. **T:** We have just discussed a number of issues and is there anything you would like to add to what quality of care means to you when talk about childbirth? S: It is mainly related with skills, qualities, communication, services and environment. Still, I can't understand evidence-based medicine very well. Take family planning as an example. All cases of pregnancy unmatched for family planning are dealt with by me, which I feel quite inhumane and very cruel. **T:** Is there anything else you would like to add? S: No.	17.1 Understanding of evidence-based care 17.3 Effects of evidence-based care 1.1 Definition of quality of care 17.1 Understanding of evidence-based care

Interview with health care provider, county hospital	
Q: Then do you heard of evidence-based medical service? A: Yes. Q: How much do you know of it? A: I didn't know so much, and I didn't understand so clearly once when I read the magazine, it is about to make all the material summarized, and the raise the conclusion, that is to say, bring others' material together and then add them up, finally to arrive at a conclusion. What is it in your mind? Q: It should be effective combined by the most advanced specialized knowledge and clinical skills and the patients' value, it is to say, the sufferer, the one we faced may be the pregnant and lying-in women's worth, including some social worth. A: What's the meaning of "worth"? Q: Value means social value. Subjective judgment and requirement will combined with social value. What do you use that issue in your actual work? A: I am a relatively considerate person. I have summarized some experiences during labor observation and made some notes, including what happened, why, how to deal with that, is there any better way to treat, etc. I think it is a best way. I think summarize these experiences constantly like this may be the best way. Q: We talk about many aspects above, and we'll nearly end this talk then, I'd like to ask you that what's your understanding towards the health-care service of childbirth? A: It is the satisfaction of the patients that means the best. Q: Do in which aspect will let the patients be satisfied in your mind? A: In technology, attitude, and include the result give birth smoothly and get a healthy baby are their most satisfying things. Q: OK, thank you!	17.1 Understanding of evidence-based care 17.2 How it is used 1.1 Definition of quality of care

Interview with hospital manager, township hospital	
T: Have you ever heard of evidence -based medicine? G: Yes, I have. **T:** What does that mean? G: You are required to have evidence for any of your medical practice. **T:** Good. How do you think about it? G: Evidence-based medicine is correct, but now it is still difficult to implement in China. At present doctor-patient relationship is very bad in China. If a patient lived in hospital for a long time without finding out any disease and using no medicines, and later she/he met with some problems, it would be a very troublesome thing. It is said that in the west areas, even high-risk and prostrate patients can only be treated after finding the etiological factors. But I have only heard about it. It is not suitable to be carried out in China now, especially in rural areas. Patients are likely to go to other hospitals if you tell her/him it will take a long time to find causes. **T:** Oh, is it very difficult to be applied in practice? G: Yes, it is difficult. **T:** Good, we have talked much. What needs to be added in improving the quality of material health care? G: I have talked what I think, including management, qualities, support from government, family planning system, community and other related departments.	17.1 Understanding of evidence-based care 17.2 How it is used 1.3 Important aspects of quality of care

Appendix 3: Example of charting

17 Evidence-based care			
	Health care providers	Hospital managers	Maternal health policy makers
17.1 Understanding of evidence-based care	**Text: Health care providers\IDI health provider 1 Di Gang** **Weight: 0** **Position:74 - 77** **Code: 17. Evidence based care\17.1 Understanding of evidence based care** **T:** Have you ever heard of evidence-based medicine? X: No. **T:** So-called evidence-based medicine is medical practice based on best evidence, not on personal experiences? X: I haven't heard of it. **Text: Health care providers\IDI health provider 2 Di Gang** **Weight: 0** **Position: 98 - 99** **Code:17. Evidence based care\17.1 Understanding of evidence based care** **Tao:** Have you ever heard of evidence-based medicine? S: I have heard of it, but I can't explain it. Maybe it is something about the hospital management.	**Text:Health managers\IDI manager 1 Di Gang** **Weight:0** **Position:105 - 109** **Code:17. Evidence based care\17.1 Understanding of evidence based care** **Tao:** Have you ever heard of evidence -based medicine? Geng: Yes, I have. **Tao:** What does that mean? Geng: You are required to have evidence for any of your medical practice. **Text:Health managers\IDI manager 2 Heng Shan** **Weight:0** **Position:181 - 184** **Code:17. Evidence based care\17.1 Understanding of evidence based care** L: have you heard of evidence-based medicine? Z: not familiar. L: It means that our day-to-day work of the clinic to follow certain rules and regulations Z: Oh, right.	**Text:Policy makers\IDI HB MCH director** **Weight:0** **Position:308 - 313** **Code:17. Evidence based care\17.1 Understanding of evidence based care** H: What do you know about evidence based care? L: Yes, last time Professor Tao mentioned this. To me it is a new topic. H: How much do you know, and what do you think about this? L: It seems that we cannot do any clinical work just according to our experience and traditional opinions. It should be effective diagnosis and treatment guidelines. If someone said I have a very good method, and then it is not effective it will not work in clinical practice. Am I right? H: So effective issue is one part of evidence based medicine. Just like in clinical research, if it is proved to be effective and acceptable, people can use it. But this effect is also different in different patients and places. So maybe in this person it has effect and on someone else it may not have effect. So it is proved by epidemiological research and statistics if it has effect on most people. L: Oh, I heard from Professor Tao.

Appendix 4: Example of charting

17 Evidence-based care			
	Health care providers	Hospital managers	Maternal health policy makers
17.1 Understanding of evidence-based care	**Common responses:** Have not heard of evidence-based care. Have heard the name of evidence-based care but do not know what it is, not clear about it, don't understand it. Heard from CHIMACA training, or college. **Minority responses:** Understand that it is about using evidence from large samples of people. Provide care according to books.	**Common responses:** Majority had not heard of evidence-based care. **Minority responses:** Two had heard but said they could not describe or explain it. Seen in journals. One described it as evidence for medical practice.	Both had heard of evidence-based practice; new term; said they did not know much.
17.2 How it is used	When EBC was explained, then there were a wide range of responses about how they did use it in their daily work: Practice according to books as much as possible, but can be difficult because of lack of equipment. Prescribe the cheapest drugs. Prescribe the fewest drugs. Doctor summarised own care provided and critically reflected on this. Read 2 obstetric journals each year. Apply it unconsciously (did not say how). Applying own experience on patients. Some said they did not use it. Some said it would be difficult to use.	When EBC was explained by the interviewer, these responses were given: 3 said that it could not be used in China: patients want to be diagnosed and not wait for evidence; not enough staff, skills, or equipment; worry about negative effects of new treatment. Care is based on text books. Staff learn from senior doctors / teachers when they go to higher level hospitals for advanced training. Before recruiting, look at qualifications and ability to diagnose and treat. We provide care according to our own experiences and do not use evidence.	Both said that it is not used in hospitals. Have not thought how to use it.
17.3 Effects of evidence-based care	Majority responses: Would be useful. Is useful.		

Appendix 5: Consent sheet: interview with a woman

Introduction:

I am Joanna Raven and I work at Liverpool School of Tropical Medicine in the United Kingdom. I am a midwife and a PhD student. I am working with researchers at Anhui Medical University to carry out some research on maternal health care in the study county.

Purpose of the research:

More and more women are using maternal health care services in hospitals. The Chinese Government is trying to develop ways to improve maternal health care. We are interested in finding out more about the maternal health care services. We would like to find out about your views on maternal health care, your experiences and your ideas about how to address the problems.

Procedures:

Interview

We would like to invite you to take part in an interview with myself, and the interviewer [*name*]. If you agree, the interview will take place in [*location of interview*] and apart from myself, the interviewer and a note taker no one else will be present. We expect that the discussion will take 30-60 minutes.

Women

We will ask you some questions about your experiences and views on maternal health care and in particular delivery care that you have received; what quality of care in maternal health means to you, your expectations of delivery and your reasons for place of delivery.

Benefits:

There will be no direct benefit to you from participating in the study, but your participation should help us to make feasible recommendations to the government to improve maternal health care services.

Incentives:

You will not be paid to take part in the research. However, we will give you some small token as compensation for your time.

Confidentiality:

The information that we collect from this research project will be kept confidential, which means that no one else except people working on this study will be able to access the information. Information about you that will be collected from the study will be stored in a file that will not have your name on it, but a number assigned to it instead. The name associated with the number assigned to each file will be kept in a locked cupboard and will not be divulged to anyone except members of the research team.

If you agree, the *interview* will be tape-recorded, but the tape recording will only be used to help us remember what we discussed during the *interview*. The information recorded is considered confidential, which means that no one else except people working on this study will be able to hear the tape recording. The tape will be kept in a locked cupboard that only members of the research team can open. You will not be identified by name on the tape. The tape will be destroyed. All reports written as a result of this project will not include any names.

Right to refuse or withdraw:

You may stop participating in the *interview* at any time that you wish.

You do not have to take part in this research if you do not wish to do so, and refusing to participate will not affect your future treatment at any health facility in any way. You will still have all the benefits that you would otherwise have at any health facility.

Who to contact:

If you have any questions you may ask those now or later. If you wish to ask questions later, you may contact:

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